UNIVERSITY OF ALBERTA

A COMPARATIVE STUDY OF PAPER AND PENCIL AND THE COMPUTER FOR PROCESS WRITING BY FOUR GRADE SIX WRITERS

BY

PAMELA ELLEN CARTER

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ABSTRACT

This exploratory study compared the types of revisions done by grade six writers composing with paper and pencil and composing using a word processor at the computer. Completed compositions were rated to determine quality, and a word count was done to determine quantity of writing, when students used paper and pencil versus the computer for process writing.

The students, during process writing, composed on self-chosen topics in the natural setting of their classroom. They wrote, revised, conferenced with their teacher and classmates, and shared their writing.

Data consisted of all student compositions in both writing modes, video records of computer-generated stories, audio records of student-teacher conferences and of student and teacher interviews, and observations made by the researcher.

Analyses of the data were made by:
(1) categorizing and analyzing the revisions made throughout process writing, using a category system of revision developed for the study, having five categories: CONTENT, DEVELOPMENT, SENTENCE SENSE, CONVENTIONS, and STYLE (2) comparing the revisions independently initiated by the student with those that were teacher-initiated during conferencing (3) assessment of the final products using a four point holistic scale to determine and compare quality of

writing, and (4) a word count of all final products to compare quantity of writing in both modes of writing.

The study determined that the students made similar types of revisions when composing with paper and pencil and with the computer. Most revisions were in the CONVENTIONS and SENTENCE SENSE categories. A greater number of revisions were made on the computer stories than on the paper-and-pencil stories. While conferencing with their teacher, a larger number of revisions were made on the computer stories. However, the students made more independent revisions on their paper-and-pencil stories. These grade six writers composed more at the computer and the stories were of better quality than those composed with paper and pencil.

Implications for teaching and research in the area of process writing are included in this report.

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CHAPTER 1

INTRODUCTION AND STATEMENT OF THE PROBLEM

Chapter Overview

The introductory chapter states some personal reflections and theoretical background to the study, the study's purpose, and the research questions which were the focus of the study. Limitations and significance are outlined and terms pertinent to the study are defined. Finally, an overview of the study and contents of each chapter are briefly described.

Personal Reflections

The arrival of the microcomputer made the decade of the eighties an exciting and invigorating experience for most students and many teachers. As a teacher, I had read articles about such things as LOGO (a one page article in MacLeans magazine which made little sense to me at the time, but somehow I knew it had significance for I tore it out and put it in a file folder) and how computers would change teaching. One could not help but wonder how this newest machine would impact education and teaching styles.

I had taken courses about microcomputers before I ever saw a microcomputer in a school. Soon I was anxious to introduce my students to what I saw as the wonders of this newest piece of technological wizardry. With the support of a cautiously optimistic, but progressive principal, I set up the first two computers in our suburban Edmonton school. Recently, I reflected on the hours that it took that Sunday at school to read the manuals, set up and try the machine, and go back to the manuals, because the computer did not work! The cause for the reflection came almost seven years later when it took me twenty minutes to unpack, set up, and try the two new computers our school had just purchased. I looked around the classroom at the twenty or so computers that we now had and once again the excitement returned.

Thus, the interest for this study grew from those early experiences, and most importantly, from the delight and enthusiasm of the students I worked with both in the early and later years of my classroom computer experience.

Background to the Study

If, as Seymour Papert argued, the computer has the potential to be 'the pencil of the future' (Schwartz, 1982), we must begin now to study how it affects students as they write. Recent developments suggest that student composition should be considered as process rather than product (Calkins, 1983; Graves, 1983; Harste, Woodward, and Burke, 1984) with the result that the writing paradigm has undergone a tremendous change and students in many classrooms are engaged in process writing. With the recursive nature of the writing process, we need to ask how microcomputer word processing programs can aid children in their development as writers (Branan, 1984; Kane 1983; and Schwartz, 1982).

The coupling of the word processor with process writing poses some new and interesting questions, in that there are many aspects of the writing program that could be studied. For example, students have long found the most difficult and tedious aspect of writing with paper and pencil to be the revision process (Daiute, 1985; Peacock, 1986). Students often resist the notion of revision, because they do not want to change their composition, especially where changes require that they cross out and erase what they have written (Calkins, 1980). If the word processor makes revision easier, the need exists to study its various effects, if any, on the revision process. Does the computer, as word processor, create an environment that will help students tackle the process of revision with a more positive attitude and with greater ease?

Many researchers and other educators argue that word processing is a catalyst for student growth in process writing. However, research in this area is still in its infancy. Many questions remain to be studied. Basically, we must continue to ask if ease of entering, revising, and producing attractive text are incentives for students to write more and to be more exhaustive in the revision process? Moreover, if true, will this lead to greater quantity and better quality writing by these young authors?

These questions were basic to the investigation undertaken and reported in this study.

Purpose of the Study

The major purpose of this study was to investigate the types of revisions done by student writers in grade six, when composing using a word processing program called Magic Slate, on an Apple IIe computer and an Imagewriter II printer. The revisions carried out at the computer were compared with the revisions done by the same students when composing with paper and pencil.

Completed compositions were also rated and compared to determine if there were any differences in quantity and quality of writing when students used the computer or paper and pencil as writing tools.

Research Questions

The following questions were the focus of the study:

1. What similarities and differences exist in the types of revisions done by grade six students when writing with paper and pencil as compared with writing using a word processor on the computer?

2. How does the conference, an integral component of process writing, affect the quantity of revisions done by writers at the computer and with paper and pencil?

3. Do students produce compositions of the same quality when using a word processing program and when using paper and pencil for composing?

4. Is there any difference in the quantity of writing produced when writing with paper and pencil compared with the amount produced when using a word processing program?

Definition of Terms

Word Processing Program: a software program for a computer which allows the user to manipulate text (enter, move, erase, add, find, and replace), to format, and to print text. In this study the word processing program will be Magic Slate (Sunburst Communications, 1984).

Process Writing: The recursive process of planning, writing, revising, editing, conferencing, sharing, and publishing written compositions.

Revision: any change made that will alter meaning or clarify an originally intended meaning; corrections in appearance, grammar, and spelling (Nold, 1982, p.97).

Revision Strategy: an idea or concern of the writer which helps explain why the writer changed something in his writing. The kind of revision may reflect the revision strategy used such as a cosmetic revision which would suggest a concern for appearance of the writing (Kopp, 1985, p.4)

Limitations of the Study

The following factors limit generalization of the findings:

1. The Magic Slate word processing program and the Apple IIe computer each are only one of many word processing programs and computers available for students to use in the writing process.
2. The sample size limits interpretations of the findings.

3. Though determined by their teacher to be competent in the use of the word processor, observation showed that the students needed to be more competent with the word processing program. Students who are more competent may produce better quality writing and this will need further research.
4. The investigator can not always observe the revision and editing strategies since some are done mentally, rather than verbally, on the computer or with a pencil.
5. The revision and editing process is recursive and time intensive. The study took place over two months and the time factor would limit the number writing samples that could be collected.

Significance of the Study

If the word processor is to be 'the pencil of the future', then a need exists to study its effects on student writing. Few studies have been done with elementary school students as subjects, though the microcomputer is being used in its word processing capacity in many elementary classrooms.

This study is intended to add to the body of research which is attempting to assess the effects of word processors on the types of revisions done by young writers during the composing process.

Directives for the use of a word processor as a writer's tool may be determined from the conclusions reached from the study.

Overview of the Study

The report of this study is in five chapters.

Chapter 1 provides background information for the study; states the purpose, research questions, limitations, and significance of the study; defines terms; and outlines the contents of this report.

Chapter 2 reviews current literature on the writing process, the computer and the writing process, and writing and revision with paper and pencil and with the computer. The relevance, to this study, of the literature reviewed is the culmination of the chapter.

Chapter 3 presents the methodology used in the design of the study. The chapter discusses selection and description of the study site and sample, and describes procedures for data collection and data analysis.

Chapter 4 is the analysis of the data gathered from the sample, using both paper and pencil and a word processing program.

Chapter 5 reports the findings, draws conclusions, and states implications arising from the study.

CHAPTER 2

REVIEW OF THE RELATED LITERATURE

Chapter Overview

This chapter examines theories and research about the writing process. Particular attention is directed to those studies which have examined the revision process that is an important aspect of process writing.

Introduction

Concerns about improving writing have given rise to a broad range of literature, both theoretical and research based. Much of this literature is concerned with the improvement of writing abilities and how the school can teach children, and subsequently adults, to write better. While many approaches have been taken to solve the problem, the most recent approach has been to examine not just the final product, but the writing processes of children and adult writers. The intent is, of course, to provide us with insights and knowledge which can be used to improve our learning-to-write programs.

The Writing Process

Simply defined, writing is a craft (Graves, 1983). It is a process that involves thinking and communicating (Solomon, 1986). In writing, the author constructs meaning (Perl, 1979).

Prior to the early 1970's, writing was viewed as a linear process in which composing "consisted of pre-writing, writing and re-writing" (Faigley, Cherry, Jolliffe, Skinner, 1985, p.5). Emig (1971), Graves (1983), and Harste, Woodward, and Burke (1984) argued that writing was not as clear-cut a process as had once been believed. Solomon (1986) postulated that writing was an "awareness and understanding of the function and purpose of the whole. Children learn how to write by exploring the whole writing process. The parts by themselves are meaningless" (p.2).

Writing is a complex process. A major shift from the traditional paradigm is first attributed to the research of Emig (1971) who suggested that writing was non-linear and recursive. Three processes: (1) planning, (2) writing, and (3) revision blend together. Perl (1979) and Sommers (1980) concurred that it is a recursive process. Peacock (1986) noted the interdependence of all aspects of process writing.

Flower and Hayes (1981) determined the linear aspect of the process modelled "the growth of the written product, not the inner process of the person producing it. Yet common sense and research tell us writers are constantly planning (prewriting), and revising (rewriting) as they compose (write), not in clear cut stages" (p.367).

The Computer and the Writing Process

Although cautiously optimistic about the merits of the computer as a tool for writing, researchers believe it is too early to make generalizations about its effects. Investigators report that writers enjoy using the computer to compose (Phenix and Hannan, 1984; Schwartz, 1982). Both quantity (Daiute, 1986; Fisher, 1983; Phenix and Hannan, 1984; Sekuler, 1985; Wheeler, 1985) and quality (Phenix and Hannan, 1984; Rodrigues, 1985; Sekuler, 1985) increased when young writers compose at the computer. Young writers have also been observed to do more risk taking in their writing (Phenix and Hannan, 1984; Schwartz, 1982), perhaps because the word processor does not have the permanence of the pencil, and changes can be made with ease.

Seymour Papert (1980) observed one student who moved from " . . . total rejection of writing to intense involvement accompanied by rapid improvement of quality within a few weeks of beginning to write at the computer" (p.30). Yet all writers may not find that the computer fits into their style of writing and it may be more compatible to one part of the writing process than another (Ross, 1985).

Larter's (1987) study combined quantitative and qualitative data to investigate writing with and without the computer. The ten-month study involved 90 teachers and 180 students in grades 1, 3, and 6 from Toronto Board of Education Schools. It examined the writing process, teacher-pupil roles, teacher and pupil attitudes, teachers' philosophies about teaching writing, reading scores, and the products of writing. The experimental and control groups each had 15 teachers and 30 pupils. The students first wrote for 4 months with paper and pencil, followed by 6 months of writing using Commodore C64 computers. Pupils developed keyboarding skills before using the computer. The findings suggested that elementary students, most notably primary grades students, can write better with microcomputers than with paper and pencil, after a six month period. Larter stated the findings of the study demonstrated that some differences exist in the writing process itself when the two methods of composing were compared. This process also differs from grade to grade. Writers in grades one and three included a picture with their paper-and-pencil stories, which was not always possible with the stories composed at the computer. The students wrote, read, and revised more when composing at the computer. Observational data indicated grade three students also had more on-task behaviour and were more motivated during the writing process. Grade six students did not read their writing to themselves as much as had been observed with grades one and three children.

Five eighth-grade students were investigated by Kane (1983) to determine how they used a microcomputer-based word processing system when composing. During ten sessions data were collected through (1) interviews with the students about their models for composing, experiences that had influenced their writing, and an evaluation of the computer as a writing medium (2) observation of students during writing class, and (3) hard computer copies of the students' work after each writing class. Kane concluded from the findings that students using the computer compose in the same general model and linear fashion that they had when writing with paper and pencil. Revisions were mainly the mechanics of writing (spelling, punctuation, grammar). The researcher also found evidence to suggest that the computer could be utilized in a positive way to promote involvement with composing, better organization of text, and with the elimination of the drudgery of recopying, students also showed more interest in practicing revision procedures and experimenting with other forms of text.

The revision process emerges as the key in the discussion of process writing and the use of word processors. A writing area that Murray (1978) argued has been least researched, has taken on new prominence with the arrival of process writing and the word processor. It was the revision process that became the focus of this study. Revision processes are discussed in detail in the next section.

The Writing Process and Revision Research

Paper-and-Pencil Studies

Most young writers see writing as a linear process in which one draft with few revisions is produced. The first draft is often the only one (Faigley and Witte, 1981; Murray 1978). Students have long found the most difficult and tedious aspect of writing to be the revision process (Daiute, 1985; Peacock, 1986).

Research on revision has been scarce until most recently (Murray, 1978; Sommers, 1980), perhaps because it has been difficult to research with the traditional research techniques that have been used (Murray, 1978).

There have been few studies that have had revision as their exclusive research focus, with more studies including it as a variable in research on the composing process (Bridwell, 1980). Murray saw revision as a process of rewriting and argued that " . . . rewriting is one of the writing skills least researched, least examined, least understood, and-usually-least taught" (p.85).

From her studies of student writers, Calkins (1983) described revision as "audience-aware, reversible; . . . toying with options in the mind, trying things one way and then another." Calkins also saw revision as involving "shuttling back and forth between involvement and distance, between looking back and looking forward" (p.49).

Donald Murray (1978) discussed two forms of revision: internal and external. Internal revision is a process of discovery and development of meaning by the author during the time of the writing. The audience in this case is the writer. With external revision, the writer is concerned with a greater audience than self and revises in terms of the meaning the whole piece of writing will give to the audience.

In the last decade, views on revision have changed (Gentry, 1982; Monahan, 1984) with more emphasis on process, rather than product (Monahan, 1984) and the acknowledgement that revision is a complex process (Faigley and Witte, 1981; Gentry, 1982). Experienced and inexperienced writers have different theories and approaches to revision. Inexperienced writers are concerned with fixing errors, while experienced writers' concept of revision involves major changes that may affect meaning and are more holistic (Faigley and Witte, 1981; Murray, 1978; Sommers, 1980). Revision, until recently, had been seen by many teachers as merely editing and cleaning up of surface mistakes, such as spelling and grammar (Faigley and Witte, 1981). To students, revision has been viewed more as punishment than as learning about their writing (Emig, 1971; Murray, 1978).

The evidence from studies with good writers suggests that writing is not only linear, but also recursive (Faigley and Witte, 1981; Flower and Hayes, 1981; Murray 1978). The Flower and Hayes research, using verbal protocols, gave evidence to indicate that this recursiveness did indeed exist and that the composing process involved moving back and forth "among various activities of composing, and that expert writers frequently review what they have written and make changes while in the midst of generating text" (Faigley and Witte, 1981, p.400).

Donald Graves (1983), working with young writers, has shown that they are able to be far more sophisticated in their revision processes than had previously been believed. First revisions are usually simplistic, involving mechanical changes, Children move through a sequence in the types of revisions they do, until their revisions are at an advanced level involving changes in content and meaning.

The revision strategies of student writers and experienced adult writers were examined by Sommers (1980). Using a case study approach, twenty student writers, freshmen at Boston University and the University of Oklahoma, and twenty experienced adult writers from Boston and Oklahoma City were examined. Each subject wrote three drafts of three essays, totalling nine pieces of writing. The writers were interviewed following the completion of each essay. Each essay was analyzed and changes (revisions) were categorized by operation and levels of changes. The experienced and inexperienced writers not only revised differently, but their conceptualization of the process was different as well. The inexperienced writers saw revision as involving changes in words or phrases, frequently involving deletions. They had not developed strategies to see revision in terms of the whole essay. Revision was finished when the students felt "that they had not violated any of the rules for revising" (p.383), the rules being based on conventions of spelling, grammar and format. Experienced writers defined revision differently. They revised to find a pattern, design or framework in their argument and to appeal to their readers. Sommers argued that this kind of revision is a process of discovering meaning together, in much the same way that Murray (1978) described rewriting. To experienced writers revision is a recursive process involving a variety of levels and cycles.

Bridwell (1980) assumed writing to be both a linear and a recursive process. In a study of 171 twelfth graders' transactional writing, the subjects wrote and revised one essay. A complex and exhaustive system of analyses was developed to evaluate the revisions made on the compositions. The investigator found that surface changes were made most often by the students. There existed patterns in revision strategies that students exhibited. The quality of their writing was not always an indication of the extent of their attempt to revise.

Having developed a taxonomy of revision that they described as simple, but robust, Faigley and Witte (1981) studied six inexperienced student writers, six experienced student writers and six expert adult writers. The student writers were enrolled in a writing class at the University of Texas. The expert writers were professional writers in Austin, Texas; all had experience as journalists and three had published works of fiction. Over a three-day period the subjects composed, revised, and recopied their compositions. Using their taxonomy, which differentiated revisions that changed meaning in the writing and those that did not, the researchers evaluated the revisions made during each of the three drafts. Their findings supported Sommers' (1980), contention that experienced and inexperienced writers revise in different ways. The advanced writers made more changes in the macrostructure (meaning) of their essay, while the less experienced made more surface changes.

Monahan (1984) researched revision strategies with grade twelve students. The subjects were four basic (average) and four competent writers, as determined by a writing competency test. The eight subjects wrote three essays on predetermined topics and 'think aloud' protocols were used. Categories of revision were developed by Monahan, having studied similar categories developed by Bridwell, National Assessment of Educational Progress, and Sommers. Revisions were analyzed in terms of the points of revision (stages from pre-writing to completion), levels of revision (surface, clause, word, sentence, discourse), types of revision (addition, deletion, substitution, reordering, embedding) and purposes of each revision (cosmetic, mechanical, transitional, informational, stylistic). The competent writers were found to revise for a peer audience, while the basic writers made more revisions for their teacher audience. Basic writers used the same revision strategies as competent writers, although they were more isolated and less frequently used. Competent writers made more extensive revisions.

The National Association of Educational Progress (1977), in its second national assessment of writing, studied 2500 nine, thirteen, and seventeen year old students in the United States. Each group was given an assigned topic and subjects were permitted to revise and rewrite. A category system for revision was developed for the study. Using the category system for the analyses, it was determined that the nine year olds made more cosmetic changes while the older students made more holistic changes. Though all students made some revisions, the research showed that the 9 and 13 year old groups did not improve quality and organization, compared to the 17 year old group (p.9).

To date, most of the research published on writing and revision has focused on high school and college writers. In fact, much of the research centers on advanced adult writers: senior college students, English teachers, journalists (Faigley, Cherry, Jolliffe, and Skinner, 1985). Krashen (1984), for example, cites six studies, none of which had elementary children as subjects. Summarizing from the studies, he reported that for experienced writers, revision was focused on content; for average writers revision centered around changes to clarify meaning; weak writers were concerned with mechanics.

The findings of high school and college studies suggest that we need to know more about the revision process, and in particular, the revision strategies used by writers in elementary grades (Gentry, 1982).

Word Processing Studies

Early research, dating from 1981, has provided conflicting data on the advantages and disadvantages of the word processor when writers revise their compositions. Hawrisher (1986a) emphasized that of the small body of knowledge that has emerged on writing and revision using the computer, it is difficult to draw comparisons owing to a wide variety of research designs, methods of data collection, variables examined, approach to data analyses, tools used, and competency levels of writers. Significant to these investigations is that early word processors were often complex and unfamiliar to the writers. Hawrisher specifically points to Bank Street Writer, one of a very few word processors available for elementary students, in the early 1980's. Switching screens to write and then to revise or edit is not conducive to process writing and "emphasizes a linear rather than recursive process of composing" (Hawrisher, 1986a, p.12).

Several themes have consistently surfaced in the studies that have been done. Just as experienced and inexperienced writers compose differently, they also approach revision in a very different manner. Daiute (1985) stated that experienced writers have found they wrote and revised more on the computer, and the computer made their craft simpler. Collier (1983) concurred with Daiute, and added that the complex holistic tactics of revision used by experienced writers are very different from the simplistic revisions of the inexperienced - usually simple additions, substitutions or deletions.

The word processor is seen as having some advantages for young writers. The feature that appears most commendable, by both teachers and students, is that the word processor allows text to be revised and edited with comparative ease (Branan, 1984; Green, 1984; Schwartz, 1982). The opportunity to inset, delete, move, search, and replace text, without having to rewrite the complete copy is seen to provide a more productive approach to the writing process. The ease of revising fosters a more positive attitude about writing (Rodrigues, 1985) and becomes a motivational factor for students to want to do more writing and revising (Bean, 1983; Collier, 1983; Daiute, 1982).

Students edit more frequently using a word processor than they do when using traditional methods, because it does not mean rewriting the whole piece, but simply making the needed changes (Daiute, 1986). Negative attitudes toward revision develop from the 'drudgery of rewriting' and many students view rewriting as punishment for not correcting mistakes during the first draft (Balajithy, McKeveny and Lacitignda, 1986-87; Fisher, 1983; Schwartz, 1984). Balajithy et al. further argued that "freed from the mechanical burden of recopying - the word processor can provide an environment where revision is both encouraged and easily accomplished" (p.28).

Smith (1985) argued the speed and simplicity of revising on the computer frees the writer to be more creative. The writer then experiments with language and the mental images the composer wants to capture are sustained. Daiute's (1983) interpretation is that with the rewriting and recopying removed from the writing process, "many writers feel they are freer to be creative because mistakes have less physical consequence" (p.227).

Surveys and observations led researchers to postulate that anxiety about writing is decreased due to the ease of correction (Rodrigues, 1985).

Morocco (1986) described the word processor as having "features which create a powerful environment for acquiring revision strategies" (p.1). The large print screen text, continued Morocco, allowed children to reread and reflect on writing and helped to develop a good plan by being able to connect back to what they had written. It also facilitated group discussion in editing and revising, providing easier access for these activities to occur.

Collier (1983) noted that his "study of the effects of computer-based text-editors on the revising strategies of inexperienced writers is an attempt to begin mapping this largely unexplored territory" (p.149). The subjects were four female students, aged 19-32, enrolled in an introductory composition course, who could type, but had no word processing experience. Two of the subjects had average writing skills, one had weak skills, and the fourth had superior skills. The subjects wrote and revised at the computer once a week for six weeks. Two sessions were audio taped using 'think aloud' protocols. One session was video taped from the computer monitor. The writers' revision strategies and quality of writing was not significantly different when comparing computer written essays with paper and pencil writing. The average and superior writers benefited more from using the computer than did the weaker writer. Collier concluded that the results of the study did not suggest that the word processor was the answer to solving the long standing problems of revision, but that there did not appear to be detrimental effects on the strategies used in revising writing. Student revisions were not poorer when using the word processor and improved in those students that were good writers. Although the writing and revisions of the students remained unchanged, the revisions were done more extensively and more quickly using the word processor.

Twenty advanced college freshmen were studied by Hawisher (1986a) to determine the effects of word processing on revision strategies. The subjects wrote four essays alternately using pencil and computer. The three drafts for each essay were analyzed for revisions. An analytical scale was used to evaluate the quality of the writing. Findings indicated that the use of a word processor did not encourage students to make more revisions or increase the quality of writing. The types of revisions were the same with both word processor and pen and typewriter .

Harris (1985) used a case study approach to investigate the word processor's effect on revising. This researcher believed that "rather extravagant and largely unsubstantiated claims" (p.323) were being made about word processors and their potential in improving composition writing by students. The subjects were six students in an honors freshman English course. The six subjects had both typing skills and computer experience. Students wrote four papers each and revised two with paper and pencil and two with the word processor. Findings of this study suggest that "word processing does not, in and of itself, encourage student writers to revise more extensively, especially in the macrostructure of a text" (p.330). Harris found the word processor to actually discourage revision.

Daiute's (1986) study of fifty-seven junior high school students in New York City investigated (1) revising patterns when students used paper and pencil and when they used the word processor (2) the effects of a word processor for revising as compared with a prompting program to guide students when revising compositions. Students were given time to acquire keyboarding skills and proficiency on the word processor to minimize the tool (the word processor) as a major factor in the study. The students, aged 11-16, were average readers and good to poor writers. Their teacher was using the process approach to writing, having been trained on the model of Graves and Calkins The teacher had collaborated with the researcher for two years prior to the study, working out details of the study. Eight Apple II Plus microcomputers, two printers, a typing program, a word processing program, and a program to prompt revising were used for the study. Given assigned topics and a specific time limit, the nine-month study gathered writing samples at nine-week intervals. Writing was analyzed using a taxonomy of revision adapted from Faigley and Witte's category system for revision. Conclusions of the study reported (1) these writers added more words to the end of text, but did not make more global revisions when they wrote using the computer as compared to using paper and pencil (2) students made more extensive revisions when a revision prompting program was added to the word processing program (3) the writing process is a complex one in which physical and cognitive processes interact (4) the instrument can affect the process in composition writing.

Research on the use of the word processor is in the early stages and there are few studies of young writers using computers to revise their compositions. Schank (1986), using the Bank Street Writer word processing program, conducted a study of twenty-two grade four students to determine effects of writing on the computer versus traditional writing by hand. The students wrote on three assigned topics in a three week period. The control group used the traditional paper and pencil method, while the experimental group did all their work on the computer. Following student-teacher conferences on their stories the students rewrote and edited their work. The stories were analyzed in terms of editing and revision, using t-tests. Schank found no significant difference in the ways students revised and edited.

Kopp (1985) studied twelve grade five students in two Edmonton city schools. The students wrote one story each using the computer and one using paper and pencil. For the computer composed stories Apple II and Apple IIe microcomputers were used. The stories were written in three forty-minute periods. Data gathered through text revisions, questionnaires, personal observation, and interviews were analyzed for revisions, using the National Assessment of Educational Progress revision categories, and quality, using a holistic scoring scale. Kopp concluded that the sample revised more using the Bank Street Writer word processing program than with paper and pencil and that the majority of revisions were those of mechanics of writing. Kopp also reported that his analysis showed the compositions composed using the word processor tended to be of better quality.

Toward a Research Paradigm

Evidence that studies needed to be done of young writers, writing with both paper and pencil and with computers, was quickly evident as I read the literature and research in this area. Most studies examined senior high school and college students, or adult writers (Bridwell, 1980; Collier, 1983; Faigley and Witte, 1981; Harris, 1985; Hawisher, 1986a; Monahan, 1984; Perl, 1979; Rodrigues, 1985; Sommers, 1980). Few studies of junior high school students (Daiute, 1985; De Almeida-van Hooydonk, 1986) and primary students (Graves, 1979; Larter, 1987; Phenix and Hannan, 1984) had been done. Studies that focused on students in grades four through six were also scarce (Daiute, 1985; Kopp, 1985; Larter, 1987; Schank, 1986) and of these, none had grade six students as the only subjects.

This need, and my interest, brought me to the study which compared grade six students writing with paper and pencil and with the computer, using a word processor.

Qualitative Research

The qualitative paradigm gained acceptance in the early seventies as a viable method of research, and the process of writing could more easily be studied. The study of process writing was more conducive to qualitative rather than statistical methods. Hawisher's (1986b) survey listed only one ethnography. Some of the studies cited used some tools of ethnography: interview (Collier, 1983; Daiute, 1985; Hawisher, 1986a), video tapes (Collier, 1983; Daiute, 1985), and journals (Harris, 1985; Hawisher, 1986a; Rodrigues, 1985). Having considered the studies previously done, the topic I had chosen and the research questions that I had formulated, I determined that the study would be exploratory in nature and would also use several ethnographical tools: interviews, observations, videotapes, and audiotapes. These would be important in the analyses of the data. The instruments were then chosen that would best suit the purpose of answering the research questions. The instruments are discussed in the next two sections of this chapter.

Revision Categories

In the studies cited, many of the researchers used revision categories as outlined by the National Assessment of Educational Progress Study (1977) or the categories of revision developed by Faigley and Witte (1981). Monahan (1984) developed his own categories of revision based on previous research and the work of Bridwell, Sommers and the National Assessment of Educational Progress. De Almeida van-Hooydonk (1986) developed a Category System of Revision that was "derived inductively from examination of all process drafts" (p.37).

The revision categories used in this study were drawn from the writing category system used by Edmonton Public Schools, as well as categories used in the school where the study was conducted.

Five revision categories were used, including: CONTENT, DEVELOPMENT, SENTENCE SENSE, CONVENTIONS, and STYLE. Revisions in the CONTENT category were those which affected the central idea, the development of events, characters, or setting in the story. In the DEVELOPMENT category, revisions were those that affected the elements of development or the coherent sequence at the sentence or paragraph level of the story. In the SENTENCE SENSE category, revisions were in the types and structures of the sentences, including additions and deletions of words and/or phrases. Revisions in spelling, punctuation, capitalization, grammar, and paragraphing were classified as revisions in CONVENTIONS. Revisions in the STYLE category were those which affected the sensory images created and/or those which provide more precise words or details for the reader.

Quality and Quantity of Writing

Studies in which quality and/or quantity were variables were scarce. Hawisher (1986a) observed that revision strategies were not often studies in relation to quality of the writing. Hawisher used Diederich's analytical scale to analyze quality. Holistic scales were used by Bridwell (1980), Crawford (1989), Daiute (1986), and Kopp (1985). Daiute's and Bridwell's instrument was the scoring procedure developed by the Educational Testing Service in the United States. Kopp and Crawford used scales drawn from materials developed by Edmonton Public School Board and used in inservices with writing teachers. The holistic scale used in this study was also drawn from materials of the Edmonton Public School Board.

Daiute, 1986; Fisher, 1984; Phenix and Hannon, 1984; Sekuler, 1985; and Wheeler, 1985 state that students write more when using the computer. Little data is yet available to support this claim. Daiute (1986) used words per text to determine length in her study. A decision was made to use a word count, as Daiute had, to determine length of the finished writing in this study.

Summary

Hawisher (1986b) reviewed studies that had been done on word processing. Only two of the twenty-four studies had elementary students in their sample. The majority of the studies investigated college students and/or experienced writers. Methodology was case study, experimental (researcher manipulated the sample and assigned subjects randomly) or exploratory (subjects were not assigned randomly to groups). Only one ethnographical study was cited. In half of the studies, researchers concerned themselves with the question of the length of writing. A fewer number (seven of twenty four) did a holistic assessment of writing quality. Thirteen of the studies analyzed revision, with a variety of tools being used, including student opinions, checklists, keystrokes, researcher criteria, and Faigley and Witte's categories of revision. In the studies that investigated attitudes about the use of the word processor, evidence existed of a positive attitude. The variety of tools, writing tasks, variables, and methods of analyses indicate the paucity of information that is available about any one group of writers.

In most of the previous research, writers were given specific topics for their compositions. Graves (1983), Calkins (1983) and Harste et al. (1984) argued that students write best when they choose their own topics. This study investigated students in the composing process as it was carried on in the natural setting of their classroom and topics were student-chosen. The word processing program used for this study, Magic Slate, was the most recent and most technologically advanced for use by young writers, at the time of the study.

CHAPTER 3

DESIGN AND PROCEDURES OF THE STUDY

Chapter Overview

This chapter is a description of the study site, selection and description of the study sample and the word processing program, and procedures for data collection and data analyses.

Introduction

Graves (1983), Calkins (1983), and Harste, Woodward and Burke (1984) argue that students write best when they choose their own topics. Of the research presently available, many studies took place in an environment that did not represent the normal classroom setting, with writing topics assigned by the researcher or teacher. To provide a naturalistic setting, this study investigated students in the composing process as it was carried out in their classroom under the direction of their teacher, with self-chosen topics. Observation suggested that the students soon became oblivious to the equipment.

Selection of the Site

Selection of the Study Setting

Having identified a need for a study centered in a naturalistic setting, in which students were actively involved in process writing, with self-chosen topics, a school was approached that might fit the criteria for the study.

Two classes, a grade 4/5 class and a grade 5/6 class, were observed on the first visit to the school. From the visit, it was determined that the school was involved in process writing, modelling Graves' philosophy of the writing process.

A decision was made to approach the teacher of the grade 5/6 class. At the time, I had not found any studies that had examined only grade six students and their revising processes. The grade six class had easiest access to daily use of the computers and had more experience using the computers. The study, its purpose, and its design were discussed with both the school administrator and the teacher that would be involved in the study. This teacher also believed the students were competent in the use of Magic Slate word processing program, which was one of the word processing programs being considered for the study.

Description of the Study Class as a Writing Environment

The study took place in the subjects' grade 5/6 classroom. It was a portable classroom, separate from the main section of the school, but connected by a hallway from the room that housed the computers. The students usually used the computers both in the computer room and in their own classroom. For the study, three computers were brought into the classroom each morning so that the subjects using the computers continued to be part of the regular classroom program.

Both through interview and observation, it was determined that the teacher had created a process writing environment that permeated each day. The students started their day with journal writing. The writing period was a daily period which lasted thirty to forty minutes. The students wrote for a variety of purposes and audiences. The majority of their writing was on self-chosen topics.

Each month the class produced a class newspaper which featured at least one article or story composed with paper and pencil and typed at the computer by each student in the class.

The students had opportunities to share their writing with individual classmates, the class as a whole, and their teacher. In addition, each Friday afternoon the whole school came together to celebrate their writing successes and students from each grade shared their writing. Conferencing with their peers and with the teacher was a part of the composing process in this classroom.

Selection of the Word Processing Program

Magic Slate was the word processing software used for this study. This word processing software made use of icons, providing easily recognizable pictures for choice of the functions: edit text; load, save, print, or delete a file; start a new file; or make a new data disk.

The editing features were designed for ease of use, by even the youngest authors. Students could edit on the same screen as they had composed on, eliminating the need to change screens, which often proves difficult for young writers and interferes in the writing process.

A major feature of Magic Slate is its capability to allow writers to use 20-, 40-, or 80-column print. The 40-column print was used for the study. The students had been using the 40-column format for their work during the year. This also facilitated the data analyses, as the 40-column print was easily recorded on video record.

Selection of the Study Sample

Six grade six students, four girls and two boys, were selected from a class in a suburban Alberta school district. The students were in a split grade 5/6. class and were involved in daily writing as part of the total learning process.

The classroom teacher selected two good, two average, and two poor writers which she determined represented the writers in her grade six class. The teacher's decision was based on the evaluation of the writing done by her students during the preceding seven months of the school year. The students were also identified by their teacher as competent in the use of the word processor Magic Slate and were able to independently (1) load a file from a data disk (2) enter text (3) use the necessary text-editing features (delete, insert, move, add) (4) save text (5) print text.

Though the students were identified as competent users of the word processing program, they had not done any composing at the computer. They had previously used the word processor to type in stories that had been written with paper and pencil. The students had used the computer for many purposes throughout the year and had good access to the computer room, as well as having frequent use of computers in their classroom.

I met with the students who had been selected by the classroom teacher. I explained that the study would take place during regular class time and that they would write some stories at the computer and some using their paper and pencil. I told them I was interested in what students did when they wrote stories. Students were not given any further information about the purposes of the study, as the researcher believed that it might affect how they wrote and revised their stories. All students selected agreed to participate in the study.

Written parental permission was received for each subject selected for the study. Students and parents were assured that a student could withdraw from the study at any time. The letter the parents received can be found in Appendix 1.

While six students participated in the study, the final sample consisted of four children and their writing samples. One student was dropped from the original six students identified by the teacher because of behavioral problems that affected performance. Because the remaining five students consisted of four girls and one boy, a decision was made to drop the boy so that gender issues would not have to be addressed in the analyses of the data.

To protect the anonymity of the students, the teacher, and the school in this study, they are referred to by the following pseudonyms: Michelle, Meghan, Sarah, Joan, Mrs. Taylor, and Hawthorne School.

Design of the Study

The subjects were divided into 2 groups of 3 students each. Group 1 wrote stories using the word processor for the first half of the study, while the second group wrote using pencil and paper. At the half way point in the study, the students changed modes, with the first group writing with paper and pencil and the second using the computer.

Three Apple IIe computer systems and one Apple Imagewriter II printer were used for the computer-assisted compositions. The 40-column version of Magic Slate was used for the study. The students had been using this version for their work during the year and were familiar with it. Students saved their own stories on individual data disks. A back-up disk was used so that two copies of the students' work were available at all times.

The students using paper and pencil were instructed to use pencil only on their paper for writing, as had been done throughout the year in this class. I also instructed them to cross-out rather than erase any changes they made. This did not change the usual classroom procedure, as the teacher had encouraged them to cross-out, rather than erase, during their daily writing sessions.

Composing took place during the regular classroom writing program and was part of the authoring process that was being used in the classroom. Following each class, I made photocopies of the hand written work and hard copies of the computer-written stories. Undoubtedly, the presence of the researcher and the technological equipment would provide some disruption to the normal classroom setting. The researcher and the teacher cooperated in keeping obvious distractions under control.

Throughout the study there were occasions on which I was not only a researcher, but a participant observer as well. All students in the class knew I was a teacher and would direct questions to me about their work, ask me to listen to their stories, or request help when they were having difficulty with part of the story. It was during these interactions that I often learned about the students' feelings and attitudes about writing.

Data Collection

Data consisted of both paper-and-pencil and computer-produced student compositions, video-taped records of their computer compositions, audio records of their comments while composing under both conditions, student and teacher interviews, and researcher observations. These provided as complete a record as possible of the processes the students used when they composed and revised.

Description of the Time Frame

The study took place from April 9 through June 2, 1987. Thirty-one visits were made to the classroom. The students' writing class consisted of a 30 to 40 minute period each morning. In that time period, students wrote stories, conferenced with their teacher and their classmates, and shared their compositions with the class.

Prior to the commencement of the study, I visited the classroom on three occasions. The purpose was to familiarize myself with the classroom setting and the teacher's methods and to become acquainted with the students. Equipment that would be used in the study was set up. This gave the students, and particularly those involved in the study, an opportunity to observe how the equipment would gather the data.

Collection of Writing Samples Using Paper and Pencil

The students composing with paper and pencil continued with their normal classroom procedures. The students were instructed to make all changes by crossing-out, rather than erasing. By using this method, all changes that the writers made were recorded on paper. This method was consistent with procedures usually used by students in their writing class.

At the end of each writing session, a photocopy of that day's work was made for my files. It was dated, so that all changes for that day's writing could be recorded.

An audio record of student and/or teacher comments was made while the students composed using paper and pencil. The audio recorder was placed on the desk next to the students' writing materials. Prior to the study the students had received an explanation of why I wanted them to use the audio recorder. As the study progressed I determined that this was difficult and disruptive for some of the students. While I encouraged them to try and make comments when they worked, I did not pressure the students. I matched any comments made by the students to the specific writing revision, and co-ordinated comments made during conferences the students had with their teacher, with the copy of the student's writing done with the paper and pencil. This permitted me to verify changes in the composition and the reasons the students made these changes, where possible.

Collection of Writing Samples Using the Computer

As students composed using the word processor at the computer, each key stroke was recorded on video tape. Input from the processor was output through the video recorder (VCR) to the monitor, thus allowing a continual video recording. In this way, I was able to capture on video record, every change that the writer made while using the word processor.

At the end of each writing session, a hard copy of the day's work was made and the file saved for that date and version of the story (e.g. Humphrey.24.1). At the end of the next session, the file was again saved, but the date and version number were changed (e.g. Humphrey.25.2). This allowed me to keep a day-by-day record of all work, both on video record and on a hard copy. The hard copy could then be used to identify changes made, by comparing it with the video record.

While students composed at the computer an audio record was also made of student and/or teacher comments. The audio recorder was placed on the desk next to the computer. As the study progressed I determined that this was difficult and disruptive for some of the students. I encouraged them to try and make comments when they worked, but did not pressure the students. I matched any comments made by the students to the specific writing revision, and co-ordinated comments made during conferences the students had with their teacher, with the copy of the student's writing done at the computer. This permitted the me to verify changes in the composition and the reasons the students made these changes, where possible.

Student Interviews

At the conclusion of the study, I had an audio-recorded interview with each student. The questions presented were designed to gather data about the students attitudes and perceptions about their writing skills and their reactions to composing at the computer.

This data, while not directly pertinent to the study, would provide background to the study. It could be important in interpreting the results of the study and drawing conclusions. Appendix 2 contains a summary of the information gathered in the interviews with the students at the conclusion of the study.

Teacher Interview

An audio record of an interview with the teacher was also made. The teacher was interviewed to gather information about the subjects attitudes and abilities as emergent writers.

The teacher was also asked for information about the revision skills that she had been developing in her students, through process writing. Appendix 3 summarizes the teacher's comments.

Observation

I made notes during visits to the classroom on any aspect of the study that I felt may not have been recorded on video or audio tape.

Data Analyses Procedures

In keeping with the research questions, three areas were analyzed following the collection of the data. These were types of revisions by category, quality, and quantity of writing for all compositions composed under each writing condition. These analyses will be discussed in this section.

Each revision done by the students was recorded, categorized, and counted using the following revision categories:

CONTENT

Revisions which affect the central idea, the development of the events, characters, or setting in the story.

DEVELOPMENT

Revisions which affect the elements of development or the coherent sequence at the sentence or paragraph level of the story.

SENTENCE SENSE

Revisions in the types and structures of the sentences, including additions and deletions of words and/or phrases.

CONVENTIONS

Revisions in spelling, punctuation, capitalization, grammar, paragraphing.

STYLE

Revisions which affect the sensory images created and/or those which provide more precise words or details for the reader.

Revisions were divided into those made under each writing condition. The revisions were also divided into those done independently by the student and those done through teacher initiation. The types of revisions were compared and summarized for both students. In order not to skew the results of the study due to the limited keyboarding experience of the study sample, where an error was obviously a keyboarding error and not a clear spelling error, it was not included in the error count in analyzing the data.

The quality of the compositions was analyzed using a holistic scoring scale. Two raters scored each composition on a four-point scale. Scores of all paper-and-pencil compositions in the sample were compared with scores of stories written at the computer. The individual student's scores on paper-and pencil-stories were compared with the same student's computer-generated stories.

A number count was done on the final copy of each story in the sample to determine the quantity of the writing produced during the study. The study sample's volume on paper-and-pencil stories was compared to the volume produced by the same sample when using the computer to write stories.

Reliability of Holistic Scoring

Two raters were selected for assessing the student writers' compositions. These raters were teachers who had experience in a daily writing program and in assessing student composition at this grade level. A four-point holistic scoring scale (Appendix 4), used by the Edmonton Public School Board (1986), was the tool used to evaluate the quality of the writings.

For consistency in scoring, the two raters and the researcher met for a four-hour session. The holistic scoring scale was discussed in detail by the raters and the researcher. The raters then took grade six students' writing samples and rated them independently. The raters discussed the scores assigned to the sample compositions and where discrepancies existed, they determined why the scores had differed. Both raters indicated that they felt the meeting had been extremely beneficial in helping them to score the writing samples gathered during the study.

The raters scored the writing samples from the study. In order to reduce bias, the researcher reproduced all the stories using a word processing program. As a result, raters did not know which compositions were computer generated and which were produced using paper and pencil. Copies of the selections in the format presented to the raters are in Appendix 5.

The Arrington Formula used by Kopp (1985) to determine percentage of agreement between the two raters was then applied to the scored compositions.

The percentage of agreement formula is:

$$\frac{2 \text{ X \# of Agreed Scores}}{2 \text{ X \# Agreed Scores } + \text{ \# Disagreed Scores}}$$

The percentage of agreement on the holistic scoring of the students' writing was 0.80.

Verification of Revision Categories

The revision categories that had been developed by the researcher were discussed with two language arts teachers.

The researcher had a two-hour meeting with the first teacher. The categories were discussed in detail. The teacher believed the revision categories to reflect the types of revisions sixth grade students would make in process writing. Together, and independently, the researcher and the teacher classified revisions from samples of compositions at this grade level.

The second language arts teacher met with the researcher for four hours. A similar procedure was adopted as with the first teacher. The compositions that the second teacher and researcher independently classified by revision categories were compared for percentage of agreement using the Arrington Formula.

The percentage of agreement on the revision categories was 0.90.

CHAPTER 4

FINDINGS OF THE STUDY

Chapter Overview

This chapter reports the analysis of the revisions done according to the revision categories. Examples of each revision category are presented.

The second section of this chapter presents the analyses of the revisions according to the revision categories designed for the study. Since the writing samples, except for one, involved conferencing with the classroom teacher, both independently initiated and teacher-initiated revisions are studied.

In the third section, the numbers of independently initiated and teacher-initiated revisions are reported. The final two sections of this chapter include the results of the holistic scoring of the paper-and-pencil and computer stories by two independent raters, as well as a comparison of the quantity of writing for each subject in paper-and-pencil and computer mode.

Overview of the Application of the Revision Categories to the Writing Samples Gathered in this Study

The revision categories developed for the study and described in Chapter 3 (page 49) were used to identify changes made by the student writers during process writing. Since these categories were specific to the study, this section is included to explain how the category system applied in this study by providing examples drawn from the writing samples of the children who participated. For each category, a comment on the overall percentage use of the specific category in the writing samples produced during the study is also reported. The analysis of the subjects' individual writing products follows.

CONTENT Revisions

Revisions in CONTENT by all four students were less than 1% of the total revisions. Most revisions in CONTENT were changes in the title of the story. The writer would assign a title and begin to write a story, only to find after a short time that either she could not think of anything else to write about that topic or that she thought of new ideas to fit with what she had written, but the new ideas did not match the title. These title changes were classified as CONTENT changes because they affected the central idea and the development of the story.

In her story "Return of the Cubs", Sarah wrote and revised as follows:

> ORIGINAL: Then one day the cubs were playing by a den of bears. What will happen? Will they survive? Find out in part three.

> REVISED: Then one day the cubs were playing by a tent where people were. What will happen? Will they survive? Find out in part three.

The revision changed the central idea as well as the setting of what Sarah would write about in part three. The events would develop differently with the change in CONTENT. Sarah further revised this part of her story, with the final copy being:

> REVISED: Then one day the cubs were playing by a campsite where people were camping. What will happen? Will they run quickly to their parents? Find out in part three.

DEVELOPMENT Revisions

The revisions that were classified under the category, DEVELOPMENT, were also small in number, just 1% of the total revisions. Most changes were those that involved the concept of time, so that the story would have a logical sequence.

During Michelle's conference about the story "Redhead" an example of the change in time frame was pointed out by her teacher. The teacher suggested that perhaps someone would notice if a student came to class and then was gone for about two hours. Michelle then made the change, having the character in the story out of the room for about 45 minutes.

> ORIGINAL: One day when Suzy went to school and when she got there everybody started laughing and teasing her for no good reason at all. She ran into the washroom and started to cry.
> Later on at about 11 am, Suzy went back into her classroom.

> REVISED: One day when Suzy went to school and when she got there everybody started laughing and teasing her for no good reason at all. She ran into the washroom and started to cry.
> At about 9:45 A.M., Suzy went back into her classroom.

Meghan added a sentence to her story, "Toby the Turtle". It was categorized as a revision in the DEVELOPMENT category. This addition affected the development of the paragraph, but did not affect the central idea of the story.

> ORIGINAL: Luke and his mother went outside to look for Tobby. "I found him!!" yelled Luke after they had been looking for awhile. He took him inside and gave him some food.

> REVISED: Luke and his mother went outside to look for Toby. "I found him!!" yelled Luke after they had been looking for awhile. He must have been hiding under the shed. He took him inside and gave him some food.

SENTENCE SENSE Revisions

In the SENTENCE SENSE category writers added or deleted words and phrases at the sentence level, or changed the structure of the sentence to better reflect what they wanted to say in their writing. Revisions under the SENTENCE SENSE category accounted for 37% of the changes the students made.

Joan made a number of revisions in the SENTENCE SENSE category. Examples from her story, "How Cats Eyes Glow" are:

> ORIGINAL: One night the two cats didn't have to stare at the moon because their eyes started to glow and lit the path they were walking on.
>
> REVISED: One night the two cats didn't need to stare at the moon because their eyes started to glow and lit the path they were crawling on.
>
> ORIGINAL: But he needed some help from his two friends Freddy and Sam. So he called up his two friends to come over and help him tell the children the stories. Ten minutes later Sam and Freddy were over where all the children and Nanabozo were sitting.
>
> REVISED: But he needed some help from his two friends Freddy and Sam. So he phoned his two friends to come over and help him tell the children the story. Ten minutes later Sam and Freddy arrived and went over to where all the children and Nanabozo were sitting.

CONVENTIONS Revisions

In interviews with both the students and their teacher it was apparent that these writers considered revising to be those changes that come under the CONVENTIONS category. More than half the total revisions (59%) done by the writers were in the CONVENTIONS category.

In Meghan's story, "Mystery of the Mouse Eyes, Part 2", she made many revisions in the CONVENTIONS category. Revisions were both independently initiated and teacher-initiated during conferencing.

> ORIGINAL: After Grandma went to bed mom asked me a few questions. Hony, about how tall was the men? "I din't know, about as tall as you." I answered. "Did you see the hair color?" she asked again.
>
> REVISED: After Grandma went to bed mom asked me a few questions. Honey, about how tall were the men? "I don't know, about as tall as you." I answered. "Did you see the hair color?" she asked again.
>
> ORIGINAL: "Oh mom, what's the matter?" asked Mary Jane.
> "It's Uncle Jim, you were right, he is dead!"
>
> REVISED:"Oh Mom, what's the matter?" asked Mary Jane.
> "It's Uncle Jim. You were right. He is dead!"

STYLE Revisions

As with the revision categories of CONTENT and DEVELOPMENT, a very small amount, (2%) of the total revisions, were in the STYLE category.

Sarah, in her story, "The Problem", made a revision categorized under STYLE.

> ORIGINAL: Tiny started to walk home...He replied harshly, I don't need a dome friend like you.
>
> REVISED: Tiny started to walk home...He screamed harshly, I don't need a dome friend like you.

Michelle's story, "Mary Finds a Friend", also had a revision in the STYLE category.

> ORIGINAL: Mary's brother's awed at the bear cub.
>
> REVISED: Mary's brother's gazed in amazement at the bear cub.

The revisions made by Sarah and Michelle in the STYLE category gave their audience a better visual image and provided more precise words than the original writing.

Analyses of the Subjects' Revisions by Category

The first research question asked what similarities and differences exist in in the types of revisions done by grade six students when writing with paper and pencil as compared with using the word processor on the computer. In order to address this research question, the revisions made to every paper-and-pencil and computer story written by each of the four subjects (Michelle, Meghan, Sarah, and Joan) were classified according to the revision categories.

The revisions were also identified as independently initiated or teacher-initiated revisions in each category.

Michelle's Revisions

Michelle produced the greatest number of stories, three paper-and-pencil stories and six computer stories. According to her teacher, Michelle did not care to revise very much and was more anxious to write about the next idea she had in her mind.

On her paper-and-pencil stories (TABLE 1) the largest percentage of her revisions (63%) were in the SENTENCE SENSE category. She also made a significant number of revisions in the CONVENTIONS category (32%). Fewer numbers of revisions were made in the CONTENT category (2%) and the STYLE category (5%). Michelle made no revisions in the DEVELOPMENT category.

When independently initiated and teacher-initiated revisions are examined, the same pattern exists. However, in the teacher-initiated revisions, the revisions were only in the SENTENCE SENSE category (91%) and CONVENTIONS category (9%).

Michelle exhibited a similar pattern in the revisions on her computer stories (TABLE 2). Most revisions were done in the SENTENCE SENSE category (50%) and the CONVENTIONS category (36%). A small number of revisions were made in the other categories: CONTENT (3%), DEVELOPMENT (5%), and STYLE (5%). The number of teacher-initiated revisions in the SENTENCE SENSE category (54%) was not as disproportionate as it had been in the paper-and-pencil stories.

Michelle was identified by her teacher as a good student and writer. Her writing did not exhibit a spelling problem which affects the CONVENTIONS category for many writers.

TABLE 1

Revision Categories - Michelle's Paper-and-Pencil Stories

STORY		CONTENT	DEVELOP-MENT	SENTENCE SENSE	CONVENTIONS	STYLE
Candy Man	*I	-	-	12	5	1
	*T	-	-	2	2	-
The Fountain	I	1	-	9	16	1
	T	-	-	21	1	-
The Time of of Dinosaurs	I	1	-	11	7	1
	T	-	-	7	-	-
REVISIONS-INDEPENDENT		3%	-	49%	43%	5%
REVISIONS-TEACHER-INITIATED		-	-	91%	9%	-
TOTAL REVISIONS		2%	-	63%	32%	5%

* I - Independently Initiated
* T - Teacher-Initiated

TABLE 2

Revision Categories - Michelle's Computer Stories

STORY		CONTENT	DEVELOPMENT	SENTENCE SENSE	CONVENTIONS	STYLE
Mary Finds A Friend	*I	1	-	-	5	1
	*T	-	-	4	13	1
Fun	I	1	-	5	2	-
	T	-	1	4	3	1
Sick	I	-	-	-	1	-
	T	1	-	8	-	1
The Big Adventure	I	1	-	9	8	-
	T	-	-	12	6	1
Redhead	I	-	-	3	2	1
	T	-	3	10	2	1
Allen	I	-	2	5	3	-
	T	-	1	6	3	-
REVISIONS-INDEPENDENT		**6%**	**4%**	**44%**	**42%**	**4%**
REVISIONS-TEACHER-INITIATED		**1%**	**6%**	**54%**	**33%**	**6%**
TOTAL REVISIONS		**3%**	**5%**	**50%**	**36%**	**5%**

* I - Independently Initiated
* T - Teacher-Initiated

Meghan's Revisions

When writing with paper and pencil (TABLE 3) Meghan made no revisions in the CONTENT or STYLE categories. One revision was made in the DEVELOPMENT category when initiated by the teacher in conferencing. Meghan made most revisions in the CONVENTIONS category (66%), followed by the SENTENCE SENSE category (33%). When independently initiated and teacher- initiated revisions are examined, more revisions were made in the CONVENTIONS category when they were

TABLE 3

Revision Categories - Meghan's Paper-and-Pencil Stories

STORY		CONTENT	DEVELOP-**MENT**	SENTENCE **SENSE**	CONVENTIONS	STYLE
Earth Worm	*I	-	-	13	3	-
City	*T	-	1	7	16	-
Babysitting	I	-	-	4	16	-
	T	-	-	2	17	-
REVISIONS-INDEPENDENT		**-**	**-**	**47%**	**53%**	**-**
REVISIONS-TEACHER-INITIATED		**-**	**2%**	**21%**	**77%**	**-**
TOTAL REVISIONS		**-**	**1%**	**33%**	**66%**	**-**

* I - Independently Initiated
* T - Teacher-Initiated

independently initiated (53%) and teacher-initiated (77%) than in the SENTENCE SENSE category for both conditions (47% and 21%). The high percentage of revisions that were teacher-initiated in the CONVENTIONS category were boosted by the number of spelling and punctuation revisions that the teacher initiated. Though an average writer, Meghan was weak in these areas.

With the stories composed on the computer (TABLE 4), Meghan made no revisions in the CONTENT category, as was the case with her paper-and-pencil stories. Similarly, small portions of the revisions on her computer stories were in the DEVELOPMENT category (0.5%) and STYLE category (0.5%). With the computer stories 20% of the revisions were in the SENTENCE SENSE category and 79% were in the CONVENTIONS category. A pattern fairly similar to the paper-and-pencil stories was exhibited, with a high proportion of the teacher-initiated revisions being in the CONVENTIONS category (87%).

Sarah's Revisions

As with Michelle and Meghan, Sarah made the majority of her revisions under both writing conditions, in the SENTENCE SENSE and CONVENTIONS categories. However some differences did exist in the pattern exhibited by Sarah.

With her paper-and-pencil stories (TABLE 5), the number of revisions in the CONTENT category (4%), the DEVELOPMENT category (4%) and the STYLE category (7%) were minimal. Sarah made 45% of her revisions in the SENTENCE SENSE category and 40% in the CONVENTIONS category.

TABLE 4

Revision Categories - Meghan's Computer Stories

STORY		CONTENT	DEVELOP-MENT	SENTENCE SENSE	CONVENTIONS	STYLE
Rosebud	*I	-	-	6	10	-
	*T	-	-	2	8	-
Toby the Turtle	I	-	-	7	3	1
	T	-	1	2	21	-
Mystery of the Mouse Eyes	I	-	-	12	45	-
	T	-	-	6	54	1
REVISIONS-INDEPENDENT		-	-	30%	69%	1%
REVISIONS-TEACHER-INITIATED		-	1%	11%	87%	1%
TOTAL REVISIONS		-	0.5%	20%	79%	0.5%

* I - Independently Initiated
* T - Teacher-Initiated

TABLE 5

Revisions Categories - Sarah's Paper-and-Pencil Stories

STORY	CONTENT	DEVELOPMENT	SENTENCE SENSE	CONVENTIONS	STYLE
How the EarthI	-	-	18	3	-
Got its ColorT	2	1	2	13	-
Return of *I	1	3	18	7	3
the Cubs *T	1	-	4	14	3
REVISIONS-INDEPENDENT	**2%**	**5.5%**	**68%**	**19%**	**5.5%**
REVISIONS-TEACHER-INITIATED	**7%**	**3%**	**15%**	**68%**	**7%**
TOTAL REVISIONS	**4%**	**4%**	**45%**	**40%**	**7%**

* I - Independently Initiated
* T - Teacher-Initiated

When the independently initiated and the teacher-initiated revisions were examined, 68% of Sarah's independently initiated revisions were in the SENTENCE SENSE category and 19% were in the CONVENTIONS category. With teacher-initiated revisions, the pattern was reversed, with only 15% of the revisions being in the SENTENCE SENSE category and 68% of the revisions were in the CONVENTIONS category.

As with the paper-and-pencil stories, the stories that Sarah wrote on the computer (TABLE 6) had small percentages of revisions in the CONTENT category (1%), DEVELOPMENT category (1%) and STYLE category (1%). The largest proportion of revisions were in the CONVENTIONS category (71%) and the SENTENCE SENSE category (26%). This was true for both independently initiated and teacher-initiated revisions.

TABLE 6

Revision Categories - Sarah's Computer Stories

STORY		CONTENT	DEVELOP-MENT	SENTENCE SENSE	CONVENTIONS	STYLE
The Problem	*I	1	-	11	12	1
	*T	-	-	3	36	-
The Alley Cat	I	-	-	6	15	-
	T	-	1	11	31	-
Rusty	I	-	-	2	8	-
	T	-	-	-	6	-
The Clue	I	1	1	15	25	-
	T	-	1	8	21	1
REVISIONS-INDEPENDENT		2%	1%	35%	61%	1%
REVISIONS-TEACHER-INITIATED		-	2%	18%	79%	1%
TOTAL REVISIONS		1%	1%	26%	71%	1%

* I - Independently Initiated
* T - Teacher-Initiated

Joan's Revisions

Joan's paper-and-pencil stories (TABLE 7) showed few revisions in the CONTENT category (1%), the DEVELOPMENT category (1%), and the STYLE category (3%), which followed the pattern exhibited by the other three student writers. The majority of the revisions were in the SENTENCE SENSE category (67%), followed by the CONVENTIONS category (28%). When the independently initiated and teacher-initiated revisions were examined

TABLE 7

Revision Categories - Joan's Paper-and-Pencil Stories

STORY		CONTENT	DEVELOP-MENT	SENTENCE SENSE	CONVENTIONS	STYLE
How Cats	*I	1	1	45	20	3
Eyes Glow	*T	-	-	-	-	-
Untitled	I	-	-	31	7	1
Story	T	-	1	25	15	-
REVISIONS-INDEPENDENT		**1%**	**1%**	**70%**	**25%**	**3%**
REVISIONS-TEACHER-INITIATED		**-**	**2%**	**61%**	**37%**	**-**
TOTAL REVISIONS		**1%**	**1%**	**67%**	**28%**	**3%**

* I - Independently Initiated
* T - Teacher-Initiated

separately, the same pattern was evident for these two categories. Joan made no teacher-initiated revisions in the CONTENT and STYLE CATEGORIES when composing with paper and pencil.

Joan wrote two stories with paper and pencil. She chose to only conference one of those stories with her teacher. She took a long time when composing her first story with paper and pencil and made revisions each time she worked on the story. She did conference with her teacher on the second paper-and-pencil story.

When composing at the computer (TABLE 8), Joan made no revisions in the CONTENT category and few in the DEVELOPMENT (0.5%) and STYLE (0.5%) categories. None of the revisions in CONTENT, DEVELOPMENT or STYLE were initiated by the teacher on Joan's computer-composed stories. Of the total revisions done by Joan on her computer stories, the largest proportion were in the CONVENTIONS category (65%), followed by the SENTENCE SENSE category (34%). When these categories are further examined, Joan made an equal number of revisions in both the CONVENTIONS and the SENTENCE SENSE categories (49% in each category). The teacher-initiated revisions were only 12% in the SENTENCE SENSE category. The largest proportion were in the CONVENTIONS category (88%).

TABLE 8

Revision Categories - Joan's Computer Stories

STORY		CONTENT	DEVELOP-MENT	SENTENCE SENSE	CONVENTIONS	STYLE
Teenagers	*I	-	-	15	13	-
Knees	*T	-	-	6	8	-
Goodbye Sweet	I	-	1	22	24	1
Valley High	T	-	-	-	37	-
REVISIONS-INDEPENDENT		**-**	**1%**	**49%**	**49%**	**1%**
REVISIONS-TEACHER-INITIATED		**-**	**-**	**12%**	**88%**	**-**
TOTAL REVISIONS		**-**	**0.5%**	**34%**	**65%**	**0.5%**

* I - Independently Initiated
* T - Teacher-Initiated

Summary of Findings Pertaining to Students' Revisions

The analysis of the writing revisions, according to the revision categories used, did reveal some similarities and differences when the paper-and-pencil and computer stories were compared. In both modes, neither CONTENT, DEVELOPMENT, nor STYLE revisions, which could be considered the higher order of revisions, exceeded 7% of the total number of revisions recorded. Three of the four students did not make revisions in one or more of these three categories in their writing, regardless of mode, even when there was some teacher conferencing involved.

Revisions in the CONVENTIONS and SENTENCE SENSE categories accounted for the majority of changes both on paper-and-pencil and computer composed stories. Each student exhibited a unique pattern.

Michelle had a higher percentage of SENTENCE SENSE revisions in both modes of writing, and less in the CONVENTIONS category. This pattern also held when independently initiated and teacher-initiated revisions were examined.

Meghan's revision patterns were reversed from those exhibited by Michelle, with over 65% of Meghan's revisions in both writing modes being changes in the CONVENTIONS category and a much smaller percentage being revisions in the SENTENCE SENSE category. This pattern also held when independently initiated and teacher-initiated revisions were examined.

Sarah made more revisions in the SENTENCE SENSE category than the CONVENTIONS category on her paper-and-pencil stories. The reverse pattern was exhibited on computer stories with the greater number of revisions in the CONVENTIONS category and considerably less revisions in the SENTENCE SENSE category. In the stories that Sarah composed with paper and pencil, she independently initiated more revisions in the SENTENCE

SENSE category than in the CONVENTIONS category. When the revisions were teacher-initiated, there were a much greater number in the CONVENTIONS category than in the SENTENCE SENSE category. A more consistent pattern was exhibited in Sarah's computer-composed stories with the revisions in the CONVENTIONS category, both independently initiated and teacher-initiated, far outnumbering those in the SENTENCE SENSE category.

Similar to Sarah, Joan's paper-and-pencil revisions exhibited a different pattern than those of her computer-composed compositions. With her paper-and-pencil compositions, SENTENCE SENSE category revisions, both independently initiated and teacher-initiated, were greater than those in the CONVENTIONS category. In Joan's stories composed at the computer, the total revisions showed almost twice as many revisions in the CONVENTIONS category than in the SENTENCE SENSE category. When the independently initiated revisions were examined there were an equal number of revisions in both categories (49%). An examination of the teacher-initiated revisions revealed that the revisions in CONVENTIONS category were 88% of the total revisions and those in the SENTENCE SENSE category were only 12% of the total.

A Comparison of the Number of Independently Initiated and Teacher-Initiated Revisions

The second research question asked how the conference, an integral component of process writing, affected the quantity of revisions done by developing writers. In order to address the second research question, the number of revisions made on paper-and-pencil stories and computer stories were compared. The revisions made independently by the writers and those that were teacher-initiated through conferencing were compared.

During the coding of the revisions, a number count was also made of the independently initiated revisions and of the teacher-initiated revisions made during the conference.

Michelle's Revisions

Sixty-six percent of Michelle's revisions on her paper-and-pencil stories were independently initiated, and 34% of her revisions were teacher-initiated (TABLE 9).

On her computer-composed stories the reverse was evident. Thirty-eight percent of Michelle's revisions were independently initiated and 62% were teacher-initiated (TABLE 10). Michelle enjoyed working at the computer and produced six stories during the study. The stories were short and Michelle was observed to be very anxious to start new stories. This was reflected in the quantity of independently initiated revisions.

TABLE 9

Independently Initiated and Teacher-Initiated Revisions in Michelle's Paper-and-Pencil Stories

	Initiated by:		
Story	Student	Teacher	Total
Candy Man	18	4	22
The Fountain	27	22	49
Time of Dinosaurs	20	7	27
Total revisions	65	33	98
% of revisions	66%	34%	

TABLE 10

Independently Initiated and Teacher-Initiated Revisions in Michelle's Computer Stories

Story	Initiated by: Student	Teacher	Total
Mary Finds a Friend	7	18	25
Fun	8	9	17
Sick	1	10	11
The Big Adventure	18	19	37
Redhead	6	16	22
Allen	10	10	20
Total revisions	50	82	132
% of revisions	38%	62%	

Meghan's Revisions

Forty-six percent of Meghan's paper-and-pencil revisions were independently initiated and 54% of her revisions were teacher-initiated (TABLE 11).

TABLE 11

Independently Initiated and Teacher-Initiated Revisions in Meghan's Paper-and-Pencil Stories

	Initiated by:		
Story	Student	Teacher	Total
Earth Worm	16	24	40
Babysitting	20	19	39
Total revisions	36	43	79
% of revisions	46%	54%	

On stories composed at the computer, her number of revisions were very similar, with 47% being independently initiated and 53% being teacher-initiated (TABLE 12). In both modes, a small amount more of the revisions were teacher-initiated than were independently initiated. Meghan was identified by her teacher as an average writer, but had some difficulties with spelling and grammar, which may have accounted for the larger percentage of revisions being teacher-initiated.

TABLE 12

Independently Initiated and Teacher-Initiated Revisions in Meghan's Computer Stories

Story	Initiated by: Student	Teacher	Total
Rosebud	16	10	26
Toby the Turtle	11	24	35
Mystery of the Mouse Eyes	57	61	118
Total revisions	84	95	179
% of revisions	47%	53%	

Sarah's Revisions

Fifty-seven percent of revisions were independently initiated and 43% were teacher-initiated on Sarah's paper-and-pencil stories (TABLE 13). Sarah spent a long time on her story, "How the Earth Got Its Color", and although the story was short, she made a number of revisions, both independently initiated and teacher-initiated. The same was evident in her story, "Return of the Cubs".

TABLE 13

Independently Initiated and Teacher-Initiated Revisions in Sarah's Paper-and-Pencil Stories

	Initiated by:		
Story	Student	Teacher	Total
How the Earth Got Its Color	21	18	39
Return of the Cubs	32	22	54
Total revisions	53	40	93
% of revisions	57%	43%	

On computer-composed stories, Sarah independently initiated 45% of the revisions and teacher-initiated revisions totaled 55% of the revisions (TABLE 14). When Sarah began to write stories at the computer, she was observed to be enjoying the writing process much more and was anxious to get started each morning. She was also more enthusiastic about having conferences with her teacher. A change in attitude was evident when Sarah worked at the computer.

TABLE 14

Independently Initiated and Teacher-Initiated Revisions in Sarah's Computer Stories

	Initiated by:		
Story	Student	Teacher	Total
The Problem	25	39	64
The Alley Cat	21	43	64
Rusty	10	6	16
The Clue	42	31	73
Total revisions	98	119	217
% of revisions	45%	55%	

Joan's Revisions

Seventy-three of Joan's revisions were independently initiated and 27% were teacher-initiated on her paper-and-pencil stories (TABLE 15). On her first story, "How Cats Eyes Glow", Joan chose not to conference with her teacher on her story. She had worked for a long time on it and had made many revisions on it. As she wrote her final draft for her teacher she continued to make revisions as she recopied her story.

TABLE 15

Independently Initiated and Teacher-Initiated Revisions in Joan's Paper-and-Pencil Stories

	Initiated by:		
Story	Student	Teacher	Total
How Cats Eyes Glow	70	-	70
Untitled Story	39	41	80
Total revisions	109	41	150
% of revisions	73%	27%	

Sixty percent of Joan's revisions at the computer were independently initiated and forty percent were teacher-initiated (TABLE 16).

Under both writing conditions Joan revised more independently than she did in conference with her teacher.

TABLE 16

Independently Initiated and Teacher-Initiated Revisions in Joan's Computer Stories

	Initiated by:		
Story	Student	Teacher	Total
Teenager's Knees	28	14	42
Goodbye, Sweet Valley High	48	37	85
Total revisions	76	51	127
% of revisions	60%	40%	

Summary of Findings of the Number of Independently Initiated and Teacher-Initiated Revisions

TABLE 17, summarizes the number of independently initiated and teacher-initiated revisions by the four students under both writing conditions.

Three of the four students made more independently initiated revisions than teacher-initiated revisions on their paper-and-pencil stories. The fourth student made more revisions that were teacher-initiated.

TABLE 17

Percentage of Revisions in Both Composing Modes When Independently Initiated and Teacher-Initiated

Student	Paper-and-Pencil		Computer	
	*I/I	*T/I	I/I	T/I
Michelle	66%	34%	37%	63%
Meghan	46%	54%	47%	53%
Sarah	57%	43%	45%	55%
Joan	73%	27%	60%	40%
Average %	63%	37%	47%	53%

* I/I Independently Initiated

* T/I Teacher-Initiated

When comparing independently initiated and teacher-initiated revisions done on computer stories, only one student made more independently initiated revisions. The remaining three students made more teacher-initiated revisions on their computer stories. Meghan made less independently initiated revisions under both conditions, while Joan made more independent revisions under both conditions.

When overall average percentages are compared, in the paper-and-pencil mode, there were more independently initiated revisions. In the computer mode, a greater percentage of the revisions were teacher-initiated. The paper-and-pencil revisions done independently by the four students were 63% of the total, and those initiated by the teacher accounted for 37% of the revisions. With the computer composed stories, a greater percentage of the revisions, 53%, were teacher-initiated and 47% were independently initiated by the students.

When the total number of revisions (independently initiated + teacher-initiated) were analyzed, three of the four students made more revisions on their stories composed at the computer than they did on the stories composed with paper and pencil. The fourth student made slightly more revisions on paper-and-pencil stories than on the stories she composed at the computer. The students, on the average, made less revisions on their paper-and-pencil stories (39%) than on their stories composed at the computer (61%) (TABLE 18).

TABLE 18

Percentage of Revisions on Paper-and-Pencil Stories and Computer Composed Stories

	Mode of Composing	
Student	Paper-and-Pencil	Computer
Michelle	43%	57%
Meghan	31%	69%
Sarah	30%	70%
Joan	54%	46%
Average %	39%	61%

Holistic Scoring of Stories

The third research question asked if students produced stories of the same quality when using paper and pencil as compared to using a word processing program on the computer. To address this research question, a holistic scoring scale (Appendix 4) was used to determine the quality of the stories.

Two raters, using this holistic scoring scale, independently scored each of the stories written by the students. Reproductions of the students' stories, in word processing form, were presented to the raters. The stories were in random order; the raters did not know which stories were composed with paper and pencil and which were composed at the computer.

The scores, as assigned by the raters are found in TABLE 19 and TABLE 20.

On paper-and-pencil stories Rater 1 gave the students an average score of 2.44 on their stories. Rater 2 gave an average score of 2.22 on the same stories.

Rater 1 gave an average score of 2.73 out of 4 on the students' stories composed at the computer. Rater 2 gave the same stories an average score of 2.33.

In both paper-and-pencil stories and those composed at the computer, Rater 1 gave higher average scores than Rater 2, and both raters gave higher average scores to the stories composed on the computer than those written with paper and pencil.

When the scores assigned by both raters for each story are totalled and averaged, the average score assigned by the raters for stories composed at the computer was 5.06, compared with an average score of 4.67 for the stories composed with pencil and paper.

TABLE 19

Holistic Scoring of Paper-and-Pencil Stories

		Rater		
Student	Story	1	2	1+2
Michelle	Candy Man	2	2	4
	The Fountain	2	2	4
	Time of Dinosaurs	3	3	6
Meghan	Babysitting	2	2	4
	Earth Worm City	3	3	6
Sarah	Return of the Cubs	3	2	5
	How the Earth Got Its Color	2	2	4
Joan	How Cats Eyes Glow	2	2	4
	Untitled Story	3	2	5
	Average	2.44	2.22	4.67

TABLE 20

Holistic Scoring of Computer Stories

		Rater		
Student	Story	1	2	1+2
Michelle	Mary Finds A Friend	3	3	6
	Sam	2	2	4
	Sick	3	2	5
	The Big Adventure	3	3	6
	Redhead	2	2	4
	Allen	2	2	4
Meghan	Rosebud	3	3	6
	Toby the Turtle	3	2	5
	Mouse Eyes (Part 2)	3	2	5
Sarah	The Problem	3	2	5
	Alley Cat	3	3	6
	Rusty	2	2	4
	The Clue	3	2	5
Joan	Teenagers Knees	3	3	6
	Goodbye Sweet Valley High	3	2	5
	Average	2.73	2.33	5.06

Holistic Scores of Michelle's Stories

Michelle composed 3 stories using paper and pencil and 6 stories using the computer. The two raters gave Michelle identical scores on her paper-and-pencil stories. On the stories composed at the computer, 5 of 6 scores were identical, while 1 score differed by 1 point on the 4 point scale. Michelle's average score on the paper-and-pencil stories was 4.67 (TABLE 21) while her average score on the computer stories was 4.83 (TABLE 22).

TABLE 21

Holistic Scoring of Michelle's Paper-and-Pencil Stories

	Rater		
Story	1	2	1+2
Candy Man	2	2	4
The Fountain	2	2	4
Time of Dinosaurs	3	3	6
Average	2.33	2.33	4.67

TABLE 22

Holistic Scoring of Michelle's Computer Stories

Story	Rater 1	Rater 2	Rater 1+2
Mary Finds a Friend	3	3	6
Sam	2	2	4
Sick	3	2	5
The Big Adventure	3	3	6
Redhead	2	2	4
Allen	2	2	4
Average	2.50	2.33	4.83

Holistic Scores of Meghan's Stories

Meghan composed two stories using paper and pencil and three stories at the computer. The two stories Meghan wrote with paper and pencil were given identical scores by the two raters (TABLE 23). On her computer-composed stories the raters gave one identical score, with the other two scores differing by only one point on the scoring scale (TABLE 24). Meghan's average score on the paper-and-pencil stories was 5.00, while her average score on the computer stories was 5.33.

TABLE 23

Holistic Scoring of Meghan's Pencil and Paper Stories

	Rater		
Story	1	2	1+2
Babysitting	2	2	4
Earth Worm City	3	3	6
Average	2.50	2.50	5.00

Holistic Scores of Sarah's Stories

Sarah's stories consisted of two paper-and-pencil stories and four computer-generated stories. On the two stories composed with paper and pencil, the raters scores agreed on one story and differed by one point on

TABLE 24

Holistic Scoring of Meghan's Computer Stories

	Rater		
Story	1	2	1+2
Rosebud	3	3	6
Toby the Turtle	3	2	5
Mouse Eyes (Part 2)	3	2	5
Average	3.00	2.33	5.33

the second story (TABLE 25). Of the four stories composed at the computer, two of the four stories received the same score from the raters, while the other two scores differed by one point (TABLE 26). Sarah's average score, as assigned by the raters, was higher on the computer stories (5.00) than on the paper-and-pencil stories (4.50)

TABLE 25

Holistic Scoring of Sarah's Paper-and-Pencil Stories

Story	Rater 1	Rater 2	Rater 1+2
Return of the Cubs	3	2	5
How the Earth Got Its Color	2	2	4
Average	2.50	2.00	4.50

Holistic Scores of Joan's Stories

Joan composed the same number of stories (two) with paper and pencil and at the computer. For Joan's two paper-and-pencil stories and for her two stories composed at the computer, the raters gave one identical score and differed by one point on the four point holistic scale for the second story (TABLE 27 and TABLE 28). Joan's average score on the paper-and-pencil stories was 4.50, while on the computer stories it was 5.50.

TABLE 26

Holistic Scoring of Sarah's Computer Stories

	Rater		
Story	1	2	1+2
The Big Problem	3	2	5
The Alley Cat	3	3	6
Rusty	2	2	4
The Clue	3	2	5
Average	2.75	2.25	5.00

Summary of Findings of Holistically Scored Stories

A comparison of the students' total average scores of paper-and-pencil stories and computer stories shows that all four students scored higher on the computer stories than those produced with paper and pencil (TABLE 29).

TABLE 27

Holistic Scoring of Joan's Paper-and-Pencil Stories

Story	Rater 1	Rater 2	Rater 1+2
How Cats Eyes Glow	2	2	4
Untitled Story	3	2	5
Average	2.50	2.00	4.50

Michelle was identified by her teacher as a good writer. When her stories were holistically scored by the two raters, her scores were not higher than the other writers. In fact, she had the lowest average score on her computer-generated stories. Meghan, identified as an average writer, had the highest average score on her paper-and-pencil stories and on the stories composed at the computer. Sarah had been identified by her teacher as a weak writer. Her average holistic scores were not greatly different from the writers identified as good and average.

TABLE 28

Holistic Scoring of Joan's Computer Stories

	Rater		
Story	1	2	1+2
Teenagers Knees	3	3	6
Goodbye Sweet Valley High	3	2	5
Average	3.00	2.50	5.50

Quantity of Writing

The fourth research question asked if there was any difference in the amount of writing produced when writing with paper and pencil compared with the amount produced when using a word processing program. In order to address this research question, a total word count (TABLE 30) was done of the final product paper-and-pencil stories and computer stories written by each student.

TABLE 29

Quality of Paper and Pencil and Computer Stories

Student	Average Holistic Scores	
	Paper-and-Pencil Stories	Computer Stories
Michelle	4.67	4.83
Meghan	5.00	5.53
Sarah	4.50	5.00
Joan	4.50	5.50

When a word count was done, three of the four students produced more writing when using the word processor on the computer. Only Joan, wrote more when using paper and pencil to compose her stories.

Michelle had been identified by her teacher as a good writer. She produced the most text. She indicated in her interview that she liked to write, which was confirmed in the study. She produced almost twice as much text when using the word processor on the computer.

TABLE 30

Length of Paper-and-Pencil and Computer Stories

Student	Number of Words Paper-and-Pencil Stories	 Computer Stories
Michelle	1 351	2 569
Meghan	1 115	1 817
Sarah	386	1 191
Joan	884	651
Total	3 736	6 228

Meghan, described by her teacher as an average writer, also wrote more at the computer than with paper and pencil.

Sarah, described as a weak writer, who found writing to be a challenge, produced a small amount (386 words) with paper and pencil. A far greater amount (1191 words) was written at the computer by Sarah.

Identified by her te~~acher~~ as an average writer, Joan told me she only liked to write "sometimes". Joan produced the smallest amount of text overall. At the computer, she produced less (651 words) than she did with paper and pencil (884 words).

CHAPTER 5

CONCLUSIONS AND IMPLICATIONS OF THE STUDY

Chapter Overview

This chapter examines the findings of the study in relation to conclusions supported by these findings. Implications of the findings for teachers and for future research in this field are also discussed.

Findings and Conclusions

This study investigated grade six writers as they composed and revised when using two modes - paper and pencil and a word processor on the computer. The types of revisions and quality and quantity of writing were examined. The findings and conclusions of this study are reported as answers to the research questions that guided the study.

Research Question 1

> What similarities and differences exist in the types of revisions done by grade six students when writing with paper and pencil as compared with writing using a word processor on the computer?

Similarities were exhibited in the revision strategies employed by the student writers under both writing conditions. The students made limited revisions in CONTENT, DEVELOPMENT, and STYLE categories when writing with paper and pencil and on the word processor at the computer. Whether the revisions were independently initiated or teacher-initiated did not affect the quantity of revisions in these categories - it was minimal.

During the interviews with the students, it was evident that they saw revisions as those changes that came first, under the CONVENTIONS category and second, under the SENTENCE SENSE category. Under both writing conditions, the students made the major portion of their revisions in these categories. The patterns associated with these two categories varied with each of the four student writers.

Differences were exhibited when revisions in CONVENTIONS and STYLE were compared for both paper-and-pencil compositions and computer compositions. Three students made more revisions in SENTENCE SENSE than in the CONVENTIONS category on their paper-and-pencil stories. Three students made more revisions in the CONVENTIONS category than in the SENTENCE SENSE category on their computer stories. TABLE 31 shows the patterns exhibited by the student writers.

From the findings it may be concluded that students concerned themselves with the CONVENTIONS category when revising stories written at the computer, and to a lesser degree, with the SENTENCE SENSE category.

TABLE 31

Quantity of Revisions in SENTENCE SENSE and CONVENTIONS Categories

Student	Paper-and-Pencil Stories		Computer Stories	
	*1	*2	1	2
Michelle	*SS	*CON	SS	CON
Meghan	CON	SS	CON	SS
Sarah	SS	CON	CON	SS
Joan	SS	CON	CON	SS

*1. - Largest number of revisions this category
*2. - Second largest number of revisions this category
*SS - SENTENCE SENSE category
*CON- CONVENTIONS category

It may be speculated that students at this grade level are aware of the need for having their stories make sense and that the choice of words has begun to be important to them, as evidenced by the quantity of revisions in the SENTENCE SENSE category on paper-and-pencil stories.

One might also speculate that the process of revision on the computer has differences from the process of revision when writing with paper and pencil and that students may need more instruction on how to revise on the computer and how it differs from revision when composing with paper and pencil.

Research Question 2

> How does the conference, an integral component of process writing, affect the quantity of revisions done by developing writers?

Few would argue the importance of conferencing in process writing. The findings of this study indicate that the role of the conference can be even more beneficial with stories composed at the computer. Stories composed at the computer had more teacher-initiated revisions than independently initiated revisions. The students, as a group, averaged more independently initiated revisions than teacher-initiated revisions on stories written with paper and pencil. The claim that clean copy may be deceiving to student writers has merit. Student writers, perhaps, do not as readily see the revisions that are needed because the story looks neat from the very first draft. Also to be considered is the teacher's own comments in the interview. She stated that perhaps she initiated more revisions on stories composed at the computer because it was quicker and easier for the students. With paper-and-pencil stories, she was aware that they had to be rewritten and changes were not as easily made.

Individually, two of the writers exhibited the general pattern noted in the preceding paragraphs. One student made more teacher-initiated revisions than independently initiated revisions under both writing conditions. The fourth student made more independently initiated revisions than teacher-initiated revisions under both writing conditions.

The students made more revisions on stories composed at the computer than on those stories written with paper and pencil. Almost two thirds of all revisions were made on stories the students composed at the computer.

That the teacher, in conference, is an important part of the writing process has been acknowledged. From the findings it may be concluded that the combination of conferencing and the computer as the mode for composing are advantageous to young writers as they revise their compositions.

Research Question 3

> Do students produce compositions of the same quality when composing with paper and pencil and when using a word processing program on the computer?

The compositions of the four student writers, when analyzed using a holistic scale, showed that the quality of writing was marginally better on stories composed at the computer, compared with stories composed with paper and pencil.

All four students received a higher average score on their computer compositions than on their paper-and-pencil compositions. This finding was consistent for both raters using an identical four point scale to score the students' compositions.

One factor which confuses the issue is the different input made by the teacher when the computer was used. The teacher stated that she initiated more revisions to the computer-generated stories because she felt the change could be made more easily. While others have reported that computer-generated stories are better, we are left with a question. Were the computer-generated stories better because of what the children did or were they better because of the teacher input? Clearly, this is a question that will need to be researched in greater depth.

These findings support the conclusion that the compositions produced on the computer by these children were of higher quality than those produced with paper and pencil. What is not known is how the phenomena occurred. It certainly appeared that the children enjoyed composing at the computer and were more likely to make changes to their stories.

Research Question 4

> Is there any difference in the quantity of writing produced when writing with paper and pencil when it is compared with the amount produced when using a word processing program on the computer?

Three of the four students produced a greater quantity of writing when composing at the computer than when using paper and pencil to write their stories.

The difference in quantity produced in the two modes during the composing process varied with each student. The student identified by her teacher as the weakest writer produced almost three times as much writing on the computer as she did when she wrote with paper and pencil. When using the computer to compose, the good writer produced almost twice as much as when using paper and pencil to compose.

Of the two average writers, one produced one third more writing using the word processor and the other produced one quarter more when writing with paper and pencil.

While the present study does not provide a definitive answer to why the children composed more at the computer, each child in the study indicated that she preferred writing at the computer and each reported that she enjoyed writing more when using the computer. There are grounds for speculating that the computer may motivate many children to write more.

Implications for Teaching

While the conclusions of this study require more research with larger numbers and different kinds of children, the findings are consistent with a number of other studies in this area of research. Many children do seem to both prefer and enjoy composing at the computer. If more writing leads to better writing, then teachers can feel more confident in introducing the children to composing at the computer, even if time needs to be taken first to have the children acquire keyboarding skills.

The quality of the students compositions was found to be better on those composed at the computer. This, coupled with the positive attitude students have about using computers, has implications for the teaching of writing. All four students in this study indicated that they would compose only at the computer, if given the opportunity. Over time, would the enthusiasm wane as the novelty of using the computer wore off? Would the consistent use of the computer in process writing contribute to improved quality of writing? These questions remain to be answered.

The word processor appears to encourage increased revision when the conference is used in the writing process. However, under both writing conditions, the revisions were similar. The types of revisions done by the students showed no major differences when paper-and-pencil compositions were compared to computer compositions. Strategies of revision do not change or necessarily become better by using the computer. These strategies can only be acquired by modelling and instruction by the teacher and practice by the student.

The students in this study made more revisions independently with paper and pencil than they did when writing on the computer. Though students like the clean copy that they have from the first draft of their writing, perhaps this clean copy makes them less able to see the need for revision, whereas the handwritten work appears to be less polished and more in need of revisions. New skills need to be taught in how to revise when composing at the computer.

Implications for Future Research

Further study would be necessary to confirm the findings and generalizations gleaned from this study. From the small number of subjects and the relatively short period of time for the study I would not presume to declare these findings as unequivocal.

Future inquiry might investigate questions that arose, but were not within the boundaries of this study. A similar study may be undertaken with students at the same grade level or other grade levels.

In this study, an attempt was made to have students record on tape the reasons they made changes in their stories. The students found this difficult and while they were encouraged to do this, it was not done consistently by all four subjects. The 'think aloud' protocols may be a valuable tool in learning during the writing process. Students who have been instructed in 'think aloud' protocols and use them as part of their daily writing may contribute valuable information to the growing body of research available about process writing.

This study took place over a relatively short time period. A longitudinal study would undoubtedly provide more conclusive data about how students write and revise under both writing conditions.

The students in this study had previous, but not extensive experience, with keyboarding and with the word processing program. They had never composed directly at the computer before the study. A study of students who had composed at the computer for a long period of time would reveal more answers to the questions that guided this study.

The student in this study that was identified by her teacher as a weak writer produced three times as much writing when using the word processor for composing. A study involving students with difficulties in the writing process may provide directives for instruction to improve the skills of these writers.

This study did not address the question of gender differences. A study including male subjects may show differences from the findings of this study, which analyzed only the writing of female grade six students.

Other topics that might be considered for study are the relationship between quality and quantity in process writing, the impact which prompting programs may have when combined with conferencing in process writing, and the role of the teacher in process writing using the computer as the writing mode.

Before closing, another issue that needs to be discussed is the numerical aspect of the rating system used in this study and in many others. Clearly, the changes identified in this study as CONVENTIONS and SENTENCE SENSE involve lower order changes, which are more likely to occur with greater frequency. CONTENT, DEVELOPMENT, and STYLE involve idea level changes and are more likely to occur with less frequency. When a rating system depends simply on counting 'changes' as per each category it would be rare indeed for the lower order changes not to outnumber the higher order changes. If we are to have a more precise understanding of writing revisions it may be more fruitful to assign different numerical ratings to the categories which would help balance the frequency factor in comparing the types of revisions made by writers.

Concluding Statement

This exploratory study investigated grade six students as they were involved in process writing in the natural, instructional setting of their classroom. Writing on topics of their own choice, the four students composed in two modes: paper and pencil, and using a word processing program on the computer. Revisions, both independently initiated and teacher-initiated, were analyzed and the final compositions were examined for quality and quantity.

The 1990's promise to be even more exciting than the eighties as we are exposed to the newest computer technology. The challenge for teachers as we approach the twenty-first century is to capitalize on the interest and enthusiasm of our students for this technology by fully integrating it into our students' learning experiences.

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APPENDICES

APPENDIX 1

LETTER TO PARENTS

#9-10453-20 Ave.
Edmonton, Alberta
T6J 5A1
April 9, 1987

Dear Parent,

I am a teacher who is now studying at the University of Alberta. From April 13 to approximately June 5, 1987 I will be at ******** School to do a research study. The study will be about computers and the kinds of stories children write when they use the computer compared with the kinds of stories they write when they use pencil and paper. I would like your permission for your child to participate in my study.

I will be using video equipment to record the children's writing at the computer and at their desks. The video will not focus on their faces. It will focus on the actual writing because I need samples of the children as they actually write and make changes to what they write.

This research project has been approved by the University of Alberta, ********** County, Mrs. ***** and Mrs. *******. I need your permission for your child to take part in this study. If, for any reason it becomes necessary, your child may withdraw from the study at any time.

Thank you for taking time to complete the form below. I appreciate your cooperation. Should you have any questions, please feel free to contact me at 438-1816.

Yours sincerely,

Pamela Carter

I (do, do not) give my permission for my child,

______________________________, to participate in the study to be done by Pamela Carter at ******** School, commencing April 13, 1987.

____
Signature of Parent or Guardian

APPENDIX 2

STUDENT INTERVIEW DATA

Michelle

Attitude About Writing

Michelle was described by her teacher, Mrs. Taylor, as a pleasant, cheerful girl who was also "keen, interested and enthusiastic" and an above-average student who "has done well this year". She indicated that Michelle enjoyed writing, but was reluctant to revise. In part:

> Michelle has always had very good writing ability. Her attitude was always good... She always has good story ideas. She has never been one to sit and say, 'I can't think of anything to write'. She doesn't care to revise. She (Michelle) would say 'this is good enough. Here is my idea, I want to go on with something else'.

In an interview with Michelle following the study, she confirmed the teacher's belief that she liked to write. She explained that she liked to write "because you get all those interesting ideas in your head and you just can't tell them to someone, so you have to write them down on paper". Michelle liked to write about "stuff that pops into your head . . . make-believe stuff or anything". She didn't like to write about gore. She felt that the easiest part of writing was knowing what she was writing about and "finding the plot of the story".

The hardest part of writing, Michelle told me, was when she got stuck on something and she couldn't think of a word to go next. She added that it was sometimes hard to get started on a story.

> Usually it is the beginning, I have all these ideas and I can't choose which one. Then I am in the middle of the story, and I have used all my ideas and I can't find anything. Then at the end I need one more sentence to complete it, to make it perfect, and I can't find it.

Michelle added that sometimes she got stuck at the beginning, middle and end, sometimes on just one or two of these parts and sometimes not at all.

Getting Ideas and Choosing Topics for Stories

Although Michelle said she did not read much, she got a lot of her ideas for her stories from the books she did read. Other sources of topics are TV, a movie, a picture on the wall, or from something someone has said. Michelle commented that she had trouble choosing a topic when she first was composing at the computer, due to the change in format from the pencil and paper mode but that she had now "gotten used to the computer".

Michelle preferred to choose her own writing topics, rather than have them assigned by the teacher. The reason she felt this way was because she found that it often sounded like a good topic, but "you get the first few sentences done and no matter what you do you can't think of anything else". Michelle's teacher usually let the students choose their own topics for writing, but had a series of story starters on cards that students could use when they were stuck for an idea. "Sometimes I will use those cards that give you ideas, or I will think and think," Michelle told me.

Sharing the Stories

Michelle was not as enthusiastic about sharing her writing. She didn't like to share in front of the class and preferred to share with one or two people. In Hawthorne School, on Friday afternoons, the whole school came together to share published stories and Michelle did not mind sharing in front of the whole school. When I questioned Michelle for a reason about her preference to share in front of the whole school, she replied that the whole school was bigger. In class sharing, students made comments and asked questions, but during school sharing on Friday, "they just clap," said Michelle.

Making Revisions in the Stories

When I asked Michelle about changes (revisions) she made, she immediately mentioned editing changes such as commas, followed by changes so that sentences "made sense". She reported it was easier to make changes on the computer and liked not having to "scribble out" (though she also claimed it did not bother her to scribble out) and felt she would make more changes using the computer. "You can just flip back to any part of the story and take out a couple of words and add a couple there", something she didn't do when using a pencil when composing her stories. She said she liked to leave stories and go back later to "correct and conference", because then the stories seemed new to her.

Michelle pointed out that she used the screen for most of the revisions she made. She did not feel that having only a part of the story on the screen was a problem for her. She indicated that she did read the printed copy of her story, but more frequently used the screen for her revisions.

Student Attitude About Composing Modes

Prior to the study, Michelle had typed in stories that she had hand written, but had never done any composing at the computer. After her experiences composing at the computer, Michelle did not hesitate to choose the computer as her preference for her story writing. She found it "fun" and "interesting" to write at the computer.

Use of the Word Processing Program

I observed that Michelle typed quickly, though this caused her to sometimes omit a letter. Michelle was able to use the correct keyboard fingering, but usually reverted to the two-finger method. She was able to use the Magic Slate word processing program with a minimum of difficulty, being able to make a new file, get a previous file on the screen, use a variety of the editing capabilities of the program, and save the work she had done.

Meghan

Attitude about writing

Meghan's teacher, Mrs. Taylor, reported that Meghan was in the average range of achievement for her grade. She further commented that Meghan had a positive attitude about school, was willing to try anything, and got along well with her classmates.

Mrs. Taylor found Meghan's writing ability to also be within the average range, but noted that she had problems with spelling and grammar. She had lots of ideas, some of which her teacher observed were "very simplistic". The teacher also believed that Meghan was willing to work at revising her stories. Although Meghan normally wrote a lot, Mrs. Taylor felt Meghan had written more during the study, especially when composing at the computer.

For the purpose of the study, the students were encouraged to conference each story with the teacher. Meghan told both the teacher and me that she liked the idea of the more frequent student-teacher conferences.

Meghan liked to write "because it is fun and you can get out everything you think about". She liked to write about people, things that might happen, as well as make-believe. Starting a story was the easiest part of writing for Meghan. She thought that solving a problem was the hardest part of writing, and found that sometimes it was hard to write an ending for a story.

Getting ideas and choosing topics for stories

Ideas for Meghan's stories came from "stuff that happens to me, sometimes it is from dreams, or sometimes it is from my sister's stories. She writes good stories". When she had difficulty thinking of an idea to start a story, she would sometimes "block things out and let my imagination run away. Sometimes I talk to my sister".

Meghan liked to read and reported that the books she read gave her ideas for her story writing. This was confirmed in her writing during the study. Her idea for the story about babysitting grew out of having read a series of books about babysitting and having her first babysitting job the previous weekend.

Choosing her own topics to write about was Meghan's preference, but she added that there were times when it was easier if the teacher chose the topic. "When we were doing picture stories, it was pretty easy because she (Mrs.Taylor) gave us ideas and stuff".

Sharing the stories

Sharing was an enjoyable part of the writing process for Meghan and in response to a question about whom she liked to share with she replied:

> If I think I wrote a good story, I would like to share Fridays (when the students share with the whole school). If I write an OK story, then with the class. If I am starting out, with a small group, but it ends up a good story then I would share.

Making revisions in the stories

Checking to see if the sentences made sense, spelling and paragraphing were Meghan's perception of revision. By paragraphing she meant indenting each time there was a new speaker. Meghan believed it was important to make changes in her work and explained it in this way:

> If you write something and then you say this is done, and then if you read it over later you find spelling mistakes and punctuation mistakes.

Student attitude about composing modes

The difference Meghan noticed when composing at the computer and composing with pencil and paper was the number of typing errors she made when she was using the computer. She found it easier to make changes on the computer and liked the neat, tidy copy the printer produced for her. Meghan did not see a big advantage for one mode of composing over the other, but given the choice, would compose at the computer because she liked computers and thought they were "neat".

Use of the word processing program

Meghan was able to use the basic functions of the word processing program - open a new file, call up and save a file, and use format commands such as centering and vertical spacing. She became more confident in the use of the program as the study progressed.

Although aware of the correct fingering for the keyboard, like her classmate Michelle, Meghan often usually used the two-finger method. She commented during the interview with me that she made more typing errors (spacing and punctuation) when she worked on the computer, compared to the number of similar errors when writing with her pencil.

Sarah

Attitude about writing

Sarah was determined, by Mrs. Taylor, to be a "low" student. Although Sarah read a lot, her teacher explained that it didn't "seem to transfer into her spelling skills, her speech, language skills, or writing. A lot of the time she is stuck with a topic. She doesn't seem to have much to say, even in her diary". Mrs. Taylor believed Sarah liked to write and pointed out that she was very creative in poetry writing, which was not included in this study. Sarah was "not afraid to work" in her teacher's estimation; however Mrs.. Taylor felt that Sarah didn't see or understand the point of some of the revisions.

I asked Sarah if she liked to write, to which she replied simply, "sometimes". Throughout the study there were several comments on tape that she made while working when she stated that she did not like to write.

She told me that the topics she liked to write about were horses and animals. For Sarah the easiest part of writing was "working on the computer". She found getting started hard in writing, as well as when it "didn't make sense and it is all mixed up".

Getting ideas and choosing topics for stories

Sarah got most of her ideas for stories from "TV shows, books, and things at school". During the study I frequently noticed Sarah having difficulty getting started on a story. In the interview following the study, Sarah confirmed that this was indeed a challenge for her.

I asked Sarah if she liked to choose her own topics for writing. Her initial reply was "I don't know". A little later in the interview she told me that most of the time she would prefer her teacher to assign the writing topic and only liked to choose her own topic "when something happens that I want to tell".

Sharing the stories

Sarah preferred to share with only one person. She did not care to share either in class or with the whole school on Friday afternoon. She felt shy about sharing with a group of any kind. She stated in the interview, "I don't like everybody staring at me" and that when she shared with a group she always felt "scared".

Making revisions in the stories

Sarah told me it was important to make changes if a story didn't make sense. She felt "OK" about making changes depending on how she felt. Changes in spelling and sentences were the reasons Sarah mentioned.

Making changes on the computer was easier Sarah found because "it is easier to go back and not scribble out errors". She found that when she scribbled out she would get all confused and it looked messy. In her pencil and paper stories, Sarah copied one story over three times because she did not feel happy about how it looked.

Student attitude about the composing modes

Following the study, Sarah stated a preference for writing on the computer because:
(1) it is more interesting
(2) it doesn't take so long on the computer
(3) you don't have to write it over again
(4) it is faster.

Sarah could not think of any advantage for using the pencil, rather than the computer to write her stories. Given the opportunity, Sarah would use the computer all the time.

Use of the word processing program

Sarah's skill in using the word processing program improved as the study progressed. It did cause some difficulties for her, especially in formatting techniques (centering, vertical spacing). She was able to make a new file, call it up and save it without any difficulty. Her keyboarding skills were not as well developed as some of the other students in the study.

Joan

Attitude about writing

Joan was an "average student", said her teacher, who was always cheerful and cooperative in class. In her teacher's opinion, Joan had a good attitude about writing. Her comments about Joan included:

> She has some grammar problems when she talks and when she writes. . . . She has a lot of ideas with her writing, but again they are very simple ideas. She normally produces (when she writes).

During the interview, Joan's answer to the question about whether she liked writing was: "sometimes I do and sometimes I don't. It depends on what kind of mood I'm in." Joan liked to write about things that she knew. For her, the difficult part of story writing was finishing it.

Getting ideas and choosing topics for stories

Ideas for stories sometimes came from Joan's thoughts. Experiences often provided her with ideas. "Last year I took a skating test and I wrote about that." When Joan had difficulty thinking of an idea for a story, she would write a list of topics and then choose one for a story; however she found that she didn't need to do this very often.

Joan preferred to choose her own topics for writing. When she was "stuck for an idea" she liked to have her teacher's help.

Sharing the stories

Joan enjoyed sharing stories with her friends. She liked to share with the class "sometimes, but not all the time". She enjoyed the Friday afternoon sharing with the whole school. Just as Michelle had indicated, Joan liked Friday afternoon sharing because everyone just listened and didn't ask any questions.

Making revisions in the stories

Before conferencing with her teacher, Joan sometimes made changes in her stories. In response to my question about what changes she made, she answered: "I look for capitals, commas, periods and spaces . . .and spelling errors".

Making changes was important, thought Joan, "because if you go and do your rough copy and don't look it over, when you do your good copy everything is going to be messed up". She felt that making changes was fun and that most of the changes she made were in paragraphs and spelling.

Student attitude about composing modes

Joan liked the computer better for composing her stories and found it easier to make changes with the computer because "it is more fun on the computer and you learn stuff".

The main difference Joan noticed when composing with pencil and paper compared to composing on the computer was that when she used her pencil her hand got really tired. It was easier to write using the computer mode and Joan felt that if she used the computer all the time she would write more. The computer was her choice of writing tool.

Use of the word processing program

As with the other students in the study, Joan's skill in the manipulation of the word processing program increased throughout the study. She was able to use the general features of calling up, opening and closing files, as well as the formatting commands of spacing, centering and typestyles.

Joan usually used the correct keyboard fingering when composing her stories.

Summary of Interview Findings

The students varied in their attitudes about writing. Michelle and Meghan were positive and liked to write. Joan and Sarah were not as enthusiastic about the writing program and indicated they liked to write "sometimes". There was evidence that writing was difficult for Sarah. A variety of areas were cited as the easiest part of writing for these four grade six students. There was more consensus on the hardest part of writing. It was either starting the story or solving the problem (finishing the story).

Ideas for stories came from books, television, movies and the students 'own experiences. Three of the four students preferred to choose their own topics when they wrote. The fourth, Sarah, preferred to have teacher-chosen topics.

When sharing stories, the students preferred to share in small groups or with the whole school on Friday afternoon. Only Meghan indicated that she really liked to share her stories, with the other three students having reservations about sharing. Sharing in class was the least favored, because the other students then asked questions.

The revision process, as perceived by the students, was basically editing procedures and changes so that their stories made sense. The students in the study found this to be easier and quicker on the computer.

The attitude of the students was most positive about the use of the computer. All four would use the computer for composing stories, if given the choice. The reasons that they would make this choice was that using the computer was quicker, easier, and less tiring. The computer was fun and interesting.

The students had been given lessons and practice in keyboarding. Two of the students used the correct fingering most of the time, but the other two students used more of a "hunt and peck" method. They had used the word processing program Magic Slate to enter stories written originally with paper and pencil, but had not actually composed at the computer. At the beginning of the section of the study where they used the computer, each of the students showed some difficulties with using some of the commands in the program. With daily use of the program, their skills improved quickly. Three of the four students became fairly competent in the use of the program. The fourth, Sarah, improved but still need help fairly frequently, especially with formatting commands.

APPENDIX 3

TEACHER INTERVIEW DATA

Mrs. Taylor

The writing process and revision

Mrs. Taylor had a very positive attitude about the computer's capabilities as a writing tool, and was a computer user herself. The students had produced a school newspaper each term, using Newsroom, a desk top publishing program for elementary and junior high school students. Along with articles about the school and its activities, student writing was also a part of the publication.

As part of process writing, Mrs. Taylor explained that she had worked on developing revision strategies during the year. She used a conference sheet and basically looked at each sentence to see if it made sense. She called it "a very basic thing . . . it wasn't in any great detail". When conferencing with students she had each one consider whether he/she had included all the information that was needed and removed anything that wasn't necessary. She tried to have the students look at the story as a whole.

Mrs. Taylor believed that the students perceived revision as "a lot of work and they would rather not do it". For most students, their idea of revision was fixing spelling mistakes, added Mrs. Taylor. She believed the student-teacher conference to be a crucial part of the writing process, adding that the student usually did not see the problem until attention was drawn to it by the teacher.

In the interview, Mrs. Taylor commented that it was possible she had initiated more revisions on the computer composed stories than with the pencil and paper stories. Her reason was that when using the pencil to compose

> I unconsciously thought, this has to be rewritten, so it is good enough the way it is. With the computer I would think, oh this can be easily changed. . . . So that could have been a subconscious thing I did. I think there were more revisions on the computer.

Comparing the two modes of composing

Mrs. Taylor thought composing at the computer was much easier for the students, once they were comfortable with the word processing program. With experience, she believed they would see the value of the computer for revisions and start to make more than editing changes. She further stated that she thought the students "would really develop into good writers if they had it (the computer) continuously and didn't have pencil and paper, but just the computer".

Not having to rewrite their stories and ease on making changes were the strengths Mrs. Taylor believed were attractive to the students. Once students had good keyboarding skills, Mrs. Taylor saw no advantage for using pencil and paper during the writing process.

APPENDIX 4

HOLISTIC SCALE

HOLISTIC SCALE

(4) The paper reads smoothly.
The content is clear, well developed and well organized.
The intent of the writer is clear and he/she shows an awareness of the audience.
There is evidence of precise vocabulary and usage appropriate to the writing task.
Mechanical errors are few and do not interfere with the meaning intended by the author.

(3) The paper reads smoothly but may contain a few awkward parts.
The content is somewhat clear and shows some organizational problems.
The writer shows some awareness of the reader.
There is some evidence of precise vocabulary but sometimes it may seem stilted or inappropriate to the task.
There may be some mechanical errors but these do not significantly interfere with the meaning.

(2) The paper reads unevenly.
The content is not clear, although there may be some evidence that the writer knows what he/she means to say.
Vocabulary usage is correct but does not convey the author's meaning specifically.
Mechanical errors do interfere to some degree with the message.

(1) The paper is difficult to read but some understanding of the author's meaning can be deciphered.
The writer does not have an awareness of communicating meaning to a reader.
Mechanical errors and sentence problems interfere significantly with communication.

(0) The paper is not understandable.
The writer lacks the ability to communicate meaning or write sentences.

APPENDIX 5

STUDENTS' STORIES

Michelle

Story 1 - Paper and Pencil

Candy Man

One day there was a kid named Joey. He had a sweet tooth. He would eat candy and chocolate bars, and every kind of sweet he could think of. One day Joey went to the candy store to buy some chocolate bars, but they were all out. So then he went to where all the other candies were, but there weren't any there either. Joey went to the manager to complain about their candy selection. The manager told him that he was ordering in some more candy.

Joey came back to the store 1 day later, but there still wasn't any candy of any kind. Joey had a fit and went to speak to the manager again. The manager told him not to get too upset, but Joey was yelling anyways. Joey finally got onto the managers nerves, so the manager called in a policeman to take Joey out.

The next day Joey went to a new store, but could only find some gum. He asked somebody why they didn't have any chocolate bars. The person told him that they hadn't gotten them in yet and that they should be in, in 2 days. Two days went by and Joey went back. They had all the candies that Joey wanted. Joey brought ten dollars that day. He bought gum, chocolate bars and really sweet candies. Joey almost bought all the candies in the store. The only candies that were left were two gum balls. Joey went home for 2 cents so he could by the gum. When he came back they were gone. Joey saw the kid that bought them.

The boy turned around and asked how much the big 4 foot candy cost. The person said that she didn't know beecause she hadn't ever seen it before. She called out the manager and asked him. He said that he didn't remember ordering that before. Then he said that it would probably cost about $5.00. The little boy bought the candy, and ate it.

Although Joey had been eaten by a boy, he thought, "If I ever become a boy again, I swear that I will never eat another sweet as long as I live!!"

Michelle

Story 2 - Paper and Pencil

The Fountain

One day Cindy went to the park to play with her friends. She saw a fountain that she hadn't seen before. She walked around it and behind a bush she found a door. Cindy walked in.

"Hello!" she said, but nobody answered. She walked in farther. Cindy saw three hallways with three signs. One sign said, "Man Eating Dragon." The second one said, "Walk This Way." And the third one said, "Fir Breathing Chicken." Cindy went down the one that said, "Walk This Way."

Cindy found that the hallway was damp and dismal, but she kept on walking. Finally she came to another door. She knocked on it.

"Yes," said a voice.

"May I come in?" asked Cindy.

"Maybe." answered the voice. Cindy decided to just open the door.

"Hello!" she said again. "Is anybody home?" asked Cindy.

"Depends who your looking for." said the voice. Cindy walked into the room. She looked around to see if she could find anybody. Then she heard a POOF!!! She turned around and there stood a person dressed in Blue.

"Who are you ? asked Cindy.

"I'm the one and only Humphrey!" And who might you be? asked Humphrey.

"Oh! My name is Cindy."

"And what are you doing here? asked Humphrey again.

" I saw the door and decided to come in." Cindy said.

"Well, why didn't you go down the hallway that said, "Fire Breathing Chicken?"

"Because," replied Cindy, "I wanted to come down this way." Soon Humphrey and Cindy became good friends.

Humphrey invited Cindy over for dinner that night, bit Cindy said that she was going out that night, so Humphrey invited her over for the next night. She said "Okay!"

The next day Cindy went to the park to go and visit Humphrey. She walked down the hallway toward Humphrey's place. She knocked on the door.

"Humphrey!" yelled Cindy. "are you home?" Humphrey didn't answered the door. Cindy decided to just walk in. "I'm here Humphrey!" she yelled again.

"Don't come in!" Cindy heard a voice say.

"Is there soemething wrong Humphrey?"

"Maybe!" he answered.

"Well, I'm coming in wheather you like it or not." She walked into the kitchen and sat down. "Come on out Humphrey, don't be embarassed!" Humphrey slowly came to the kitchen door.

"Humphrey!" yelled Cindy, "What happened to your hair?"

"My hair?" questioned Humphrey.

"Yes," replied Cindy "You're bald!"

"Bald!" yelled Humphrey.

"Yes!" The Cindy and Humphrey talked a little about Humphrey having no hair. Cindy decided to go and buy Humphrey a wig.

Michelle

Story 3 - Paper and Pencil

Time of Dinosaurs

"Since the beginning of time, dinosaurs have roamed the earth in search of food." "Can I take a break from reading now Mrs. Green?" asked Charlie. "Just one more sentence." said Mrs. Green. "Theyv'e always been big animals." "There, that's it! Can I go out and play now?" asked Charlie. Mrs. Green nodded her head.

Later on, on the ride home from school, Charlie thought, "I'd like to go back in time. In the time of dinosaurs!" It was Charlie's stop now. Charlie got off the bus. He kept thinking about what he thought of before.

When Charlie got home, he went up to his room and pulled out a big fat book about dinosaurs. When he got to the middle of the book a big, fat, man appeared in front of him. Then he heard somebody say,

"Think of a wish,
just any old wish,
Just wish anything that
you want,
A bottle of rye,
A plum in your eye,
Wish, wish, anything that

you want."

Charlie thought for a minute.

"Hurry up kid!" the fat man said. "I wish that . . . "

"Well, come on!" he said again. "I'd like . . " started Charlie. "Come on, come on! Hurry up!" " I wish that I could bo back in time, in the time of the dinosaurs... For a week!" "Your wish is my command!" Then the fat man disappeared. Charlie thought, "Well, I'm going to need some food, and clothes and a toothbrush and toothpaste. This is going to be fun!" Charlie went into the kitchen first. He had three bananas, 4 oranges, 5 apples and 2 cans of soup in a bag when all of a sudden he disappeared. Charlie reapeared sitting on top of a tree in a jungle. "Where am I?" wondered Charlie. "In the time of dinosaurs." said a voice. "But, but, I didn't eeven have a chance to pack!" "You won't need that stuff anyways!"

Charlie sat in the tree for a little while. Then all of a sudden the tree began to shake and Charlie fell out. "THUMP!!" went Charlie as he landed. "I can't believe it . . ." thought Charlie. "I'm actually in the time of dinosaurs." Charlie was really amazed at this. Then he thought, "but where are all the dinosaurs?" All of a sudden Charlie saw this big green monster in the distance. "A dinosaur!" thought Charlie. "I want to go and see if he will be my friend for this week." And Charlie was off!

Charlie was about 15 feet away from it when he saw the dinosaur licking it's lips. "W-Will you be my friend?" Charlie asked the dinosaur. The dinosaur shook his head up and down. "Good!" said Charlie, "I think I"ll like you a lot." Charlie began to walk towards it. The dinosaur opened his mouth and popped Charlie in whole, without even chewing him. "Sure is dark in here," thought Charlie, "but I'm hungry!" Charlie pulled out 1 banana, and 1 orange. After he ate them he said, " I'm lonely, I want to go home!" and he started to cry. All of a sudden the big fat man from Charlie's story book popped into Charlie's veiw. "You again . . . " said Charlie, "Take me home! I don't like it here any more !" "Are you sure?" asked the fat man. "Sure am!" replied Charlie. And so it was. Charlie went back home and locked up his book forever.

Michelle

Story 1 - Computer

MARY FINDS A FRIEND

One day Mary was out picking strawberries when she happened to notice a bear cub. Mary thought that he was sort of cute, so she went to see him. At first the cub seemed to be limping, so Mary decided to take him home so she could fix his leg.

Once Mary got home she took the bear cub up to her room. She snuck some food for the cub and some bandages for the cub's leg. After Mary had fixed up the cub's leg, she went to find some wood to build a cub house for her new pet.

Mary finished the cub house about 2 hours later. She put some blankets inside of it and brought out the cub.

"What should I call you?" thought Mary. She heard the cub grumble and then said, "What's that you say? You would like to be called Harvey?!" The cub grumbled some more and shook his head in a way that looked like he was saying yes.

Later on in the evening, Mary thought that she should ask her parents if she could keep Harvey. After dinner Mary said that she had a surprise for her family. She brought down a big box with the name Harvey on it. She

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said.

"This is my surprise!" Mary set the box down on the table and pulled Harvey out. Mary's brothers gazed in amazement at the bear cub. Mary's mother said, "Where did you find this bear cub?"

"I found him in the forest, mother. He was all alone and was limping, so I decided to take him home so he would have a place to stay!" said Mary. "Please, please can I keep him? He's really nice and friendly! He wouldn't hurt me for the world!!" Mary's parents started to think. Her father replied,

"I'm sorry honey. We just can't keep a bear in or around the house. It's too dangerous. What if he went out one day and came back with a bunch of his friends? Then what would we do?"

"Your father has a point there, Mary." chimed in Mary's mother.

"But Mom! Dad! He's so friendly!" Her mother and father thought about this for a little while.

Later on Mary's parents came up to her room to talk about the bear cub. They said that she could keep it over night, but would have to take it back in the morning. Mary agreed to this. The next morning Mary got up bright and early because she wanted to spend a little while with Harvey. She hugged and kissed him goodbye and then took

Harvey back to the woods.

"Bye, bye!" said Mary as she walked away. Mary never saw that cub again.

Michelle

Story 2 - Computer

SAM

Once upon a time there was a boy called Sam who loved to play jokes on people. But one day somebody decided to play a joke on him.

Sam was playing on the monkey bars when he heard his name being called. He looked around, but there was nobody. Then he got off the monkey bars and started to walk around looking for the person who was calling his name.

Later on when Sam was at home, he heard his name being called again.

"What?" replied Sam, but nobody answered. "I'm going to go and talk to my mother about this." said Sam. So he went inside the house. "Mom!" yelled Sam. "Where are you?" Sam loolked around.

"Yes dear!" he heard his mother say. "I guess you want to talk to me, right?" questioned Sam's mother. Just as Sam was about to go upstairs to tell his mother the problem, she yelled down, "Don't come up honey, I'm getting dressed." Sam ran downstairs and out the door.

"Never mind, Mom!" he yelled, "It's okay. I just figured out how to solve my problem!"

Sam went back to the park and started playing on the playground. He heard his name being called again so he went to hide around the corner. Luckily Sam found the person who was calling him.

"SAM!" his name was being called again.

"What?" said Sam. "I guess that I finally found you out!" The person said that he was sorry and the two boys became good friends after that.

Michelle

Story 3 - Computer

Sick

On the night before the first day of school, I told my mom that I was really excited. I asked her if it was normal to be excited over the first day of school, and of coarse she said yes. So I got all of my stuff ready in my bag for the 60th time. It was the night before the first day of school, but I wanted to go to school that night.

The next morning I woke up on my own, but about 2 hours ahead of time. I went up to my mom's room to wake her up for school. I said,

"When is the bus coming mom? Did he forget where I live?"

My mom shook her head in a way that looked like no. Then she told me to go back to bed.

My mom walked through my bedroom door to wake me up.

"Time to get up honey!" she said. Then she pulled the covers off of me. She looked at me and told me that I looked pretty. I said thanks.

I ate my breakfast, brushed my teeth, and then brushed my hair.

"I'm ready!" I yelled to my mom, got my coat on and left.

Of coarse we didn't spend much time at school, but our teacher told us about all the fun things we were going to do the next day. I went home really excited.

In the morning I wasn't feeling good so my mom kept me home. Then I thought,

"Now I'm going to miss out on all the fun."

Michelle

Story 4 - Computer

THE BIG ADVENTURE

"Help! Help!" yelled Ralph as he ran away from the three kids in grade eight. Ralph ran down the back alley, but he came to a dead end. He turned around to see if those big kids were still chasing him, and sure enough they were. Ralph was hoping that they wouldn't notice him, but they did. The boys caught him and threw him in a big garbage bin. After they left Ralph got out and picked all the garbage off of himself.

Once Ralph got out of the alley the grade eight kids said to him;

"Who said you could get out yet?" so Ralph ran as fast as he could. He went through a door where the kids couldn't find him.

"Get out of here!" said a voice, "All we sell are little rectangular objects which kids like you aren't usually interested in." he said.

"Oh yah!" replied Ralph, "Then why would I have about 105 books that I've read a thousand times?!"

"Oh, but those are probably comic books as usual."

"Well, they're not! There's 'THE BLACK STALLION', 'THE

VIEW FROM THE CHERRY TREE' and a whole bunch of others like that!"

The man shook his head and continued reading his book.

"What's that you're reading?" asked Ralph.

"Have you ever felt when you read a book that it's really happening to you?" Ralph shook his head up and down. The man continued, "Well, this is that type of book. But you would never understand it!"

Then the phone rang. The man got up and answered it. When he came back the boy was gone, but so was his book.

"Oh no!" thought Ralph as he got to school, "I'm missing my math test!" He peeked in the room. All the kids had started their tests already, so Ralph went to the attic when no teachers were around.

There were spiders and spider webs all over the place. Ralph looked around the room and saw about 5 skulls piled up in one place. There was a dirty window along one wall. Ralph pulled a dirty mat out into the middle of the room, sat down and began to read.

"THE BIG ADVENTURE." Ralph read. Ralph read and read the book until he got hungry. Then he pulled out his apple and started munching away. Ralph continued to read the book until he was almost done. He got up and went to look out the window. He opened it up and looked out. He saw the streets below and thought, "I wish that I was in that story. It's sounds really exciting!" Ralph looked back at the book, closed the window and went back to read.

Ralph was just a couple of pages away from finishing the story when he relized it was very quiet in the school. He went out and looked around the school. It was raining and everybody had gone home. Ralph went back to the attic and tried to finish the book, but he was just too tired so he decided to go to sleep for a little while.

The next morning when Ralph woke up, it looked nice and sunny out. He ran up to the window and stared out for a little while. Then he went and sat down. He picked up the book and finished it. Ralph put the book back in his bag and ate a little bit. Then he looked out into the hallway to see if anybody was around, but nobody was. He checked in his classroom window and saw that kids were in there working. Ralph decided to return the book before going home.

Michelle

Story 5 - Computer

The Redheaded Girl

One day when Suzy went to school everybody started laughing and teasing her for no reason at all. She ran into the washroom and started to cry.

At about 9:45 a.m., Suzy went back into her classroom. She sat down and pulled out her math book, opened it up to the page assigned, then said,

"I don't know how to do this!" The whole class looked at her.

The teacher came over to Suzy and explained what to do.

Later on as Suzy was walking home, two boys came up to her and started pulling on her red hair. She yelled at them and then ran away. Suzy felt embarassed.

In the morning she got a black felt and colored her hair black. When she went to school, the kids treated her normally. But when she got home her mother tried to wash the black felt out. Luckily for Suzy it worked.

The next day when Suzy's mother wasn't looking, Suzy stole a wig. At school she put in on and although it was a little bit too big for her, she wore it anyways.

During class when Suzy put her head down, her wig fell off. A few kids looked at her, then some more kids looked at her, and then the whole class started laughing at her. Suzy felt embarased and went to the washroom for a few minutes. when she returned everybody smiled at her.

After a couple of days the kids didn't tease her as much anymore because they finally got used to her red hair and they would also get in trouble if they did.

Michelle

Story 6 - Computer

Allen

One day Allen went into the kitchen to eat breakfast. He pulled out the Alphabets and poured them in his bowl.

"Take it easy, take it easy!" Yelled a voice from the box. Allen looked around, but nobody was there. All of a sudden a liitle man popped out of the box. "Hi there!" said the man. Allen said 'hi' back. "I'm the man from the Alphabets box, don't you see." The little man went up to Allen's bowl and said, "That spells elephant, purple and pink. And look, there's a lion, orange I think!" Then he sat on the edge of Allen's bowl and started to cry. "Look, look," he said "Look at that poor little fly. Everything I see and then touch always dies or gets hurt somehow." And then he hid his face and cried a little bit more.

The little man went to sleep in Allen's bed while Allen thought about his problem.

"A magic touch is all he needs." Then Allen dialed fun-words.

"Hello" said a voice, "Can I help you?"

"Yes!" replied Allen. Then the woman on the phone said.

"Well, what do you want? Please tell me your problem."

Allen told the lady the whole story. Then she asked if Allen could bring the little man over to 'THE FUN FOUNDATION' to see if she could help him out.

In about 15 minutes Allen and the man from the Alphabets-box were at 'THE FUN FOUNDATION'. The woman looked at him, made funny noises at him, and also tickled him. The lady asked to talk to Allen alone about the little man's problem and she told him,

"I'm afraid that your little friend has a big problem. I'm going to have to take him into the lab for a few days to study his habits. Then when I give you a call you can come and pick him up! If his problem is as big as I think it is, then he's in trouble!" Allen agreed to it, said goodbye to his new friend, and left.

A few days passed by and Allen got really worried about the little man when all of a sudden the phone rang.

"I'll get it mom!" yelled Allen to his mother. "Hello!" he said.

"Yes, Allen, is your mom home? um, This is Mrs. Douglas."

"Just a minute, I'll get her!" Allen ran upstairs and told his mom that Mrs. Douglas was on the phone. His mom talked and talked and talked on the phone until Allen got worried that the lady from 'THE FUN FOUNDATION' had tried to call him. He told his mother to get off the phone because he was expecting a phone call. She said goodbye and hung up. Allen sat by the phone all day until the lady called him.

Finally after he ate dinner, the phone rang. The lady told Allen that he could pick the little man up anytime, so Allen went right after he hung up.

Once Allen got into 'THE FUN FOUNDATION' building, he went straight to the lab. He walked in and there was Allen's friend. He was sitting on a bed in the room and as happy as could be. Allen went up to him and hugged him. Then they started to talk. About ten minutes later the lady walked in the room. She took Allen into a different corner of the room and started talking to him.

"I studied him and I'm glad to say that nothing is really wrong with him, except for the fact that he isn't feeling so sure about himself. I have some special pills that he must take each day. It says on the bottle how many he's supposed to take and at what time. It doesn't matter if he runs out because this is all he'll need to take. If he ever needs anymore help, please come back to me."

Allen and the little man went back home and went to sleep. In the morning, the little man had to take two pills. Then he would practise his magic on the dog, and eat. After the little man started taking the pills, he felt like a new person!

Meghan

Story 1 - Paper and Pencil

Earth Worm City

Once upon a time, in a far away land, there was a city for earth worms only.

The worms in this city were very excited, because a rock star called Wormy was coming to town.

This rock star was the coolest worm in the world. He wore black leather pants, a red silk shirt that was usually only done up half way, and his hair was usually greased down. When all the girls saw him (evan if not in person, just a poster) they went wild! They also went wild when he went on stage to sing the song he dedicateed to all the beautiful wormy girls in the world.

Finally the day came. Wormy arrived at Earth Worm City. He was hoping that he could get there early early so he wouldn't have a crowd of girls to get through. He arrived at 3:00 in the morning. "Good!" he said, "Now I won't have a crowd of girls to get through!" But Wormy was wrong. The girls had been lined up at the door waiting for Wormy scince 11:00 that night. "Go around to the back door. There may not be as many girls there!" Once again, Wormy was wrong. There were just as many at the back door as there had been at the front door. "Oh well. I'll just have to fight my way through!!" He made it through successfully, only having 18 worms kiss him and all of htem touch him. Just as he entered the wormaclam, he noticed a very young and beautiful worm standing off to the corner and watching. Wormy knew he was in love. Love at first sight! He made himself a promise to get to know this worm.

After five hours of practicing for the show, he went out to find the girl of his dreams. She had blond hair that came 1/4 of the way down her body and curled towards the ends. She had a light purple bow in her hair with white polka-dots. She was wearing a blouse and pants that were the same shade of purple as the bow in her hair.

Just as Wormy was about to give up, he spotted her, in Worming Dales. "Okay," he said "be cool, after all this girl may not like you." He tried to catch her eyes with out being too obvious. WHen she was coming out, Wormy said in his most worm attracting voice, "Hi there."

"You're Wormy!" she said.

"Yes. Would you like to go out on a date with me?" he asked.

"I'd love to!!" she said.

"Good. I'll pick you up tomorrow night at 7:30.

****

After a few more dates, Wormy popped the question, "Will you marry me?"

"I'd love to!!" said Kathy, the worm he loved.

They married and lived happily ever after.

Meghan

Story 2 - Paper and Pencil

Babysitting

"Casey! Jonnie!" called their motheer, Alice. Both girls came downstairs.

"Jonnie, could you babysit your cousins on Friday when we go out to supper with your aunt?"

"Oh mom I can't. I'm going out with Bobby that night. Maybe Casey could." she answered. Jonnie was 15 years old. Everytime a babysitting job came along, she was always asked. To babysit you have to be 12 years or older. Casey was only one year younger then Jonnie yet she never got to babysit.

"All right. Will you babysit them?" she asked. Casey had been dying to baby sit her cousins. Her aunt just had a baby 6 weeks ago. Her name was Angela. The next youngest was Joshua. He was 3 1/2 years old. He looks just like his father. Dark brown hair with big blue eyes. He is very loving always going around kissing people. His father died in a car crash when driving home from work, when his aunt was three months pregnant. The oldest of the kids are Tanya and Timmy. They are twins and both in grade two. Tanya is 7 minutes and 44 seconds older than Timmy and three inches taller then Timmy who's 3 feet.

and went to put it in her mouth. Angela pushed it away with her hands and started kicking her feet.

"Oh Angela." sighed Casey, "Why won't you eat? Why can't you stop crying?" Just then Timmy walked in.

"Why don't you change her pampers." suggested Timmy. Casey groaned, long and loud. She picked up Angela and walked into her room. She set the baby onn the change table. Casey turned around to call Tanya and saw Joshua standing in the door watching. "Where does Mommy keep the pampers?"

"follow!" said Joshua. She followed Josh into the bathroom. Underneath the sink were the pampers.

"Thank you" Casey walked back into the baby's room. Joshua followed her. Casey carefully undid the pamper. She was relieved to see it wasn't anything mushy and gross. After that Casey laid down Angela and gave her the bottle. Casey watched tv with the twins and Joshua while Angela slept.

"So how was babysitting?" askeed Alice.

"It was okay the kids were really good."

"Okay, would you like to babysit then again next week?" asked her mother.

Casey sighed. "Sure" she answered. All the thoughts of the evening ran through her head. What if next time Angela did something mushy and gross. Oh well!

Meghan

Story 1 - Computer

ROSE BUD

Rose Bud is a young flower that lives all alone in a forest. She is sad because she has no other flowers to talk to. Some times Rose Bud will make up pretend friends to play with.

One day in May, Rose Bud was playing with her pretend friends, when she heard the crunching of twigs and leaves. She wasn't sure what to do. In all the time Rose Bud had lived in the forest, she had never heard this sound before. Suddenly she saw a big pair of feet in front of her. At the sight of this, Rose Bud fainted!

When she awoke, Rose Bud found her beautiful stem soaked in a vase of water. "Oh no!" shrieked Rose Bud, "Something has flower-napped me, and is trying to kill me!" Rose Bud began to weep getting her soft red petals covered in salty tear drops.

After a few days, she found herself turning brown. Her stem was starting to get all hard, her petals were beginning to fall off one by one, and she was dying. After a few more days, Rose Bud said, "The end is coming soon, I'm about to die any time now and no one is here to keep me company in my last few days of life."

That night when every one was a sleep, Rose Bud died. No one had noticed her death. About three days after her death, the people who brought her from the forest, saw that she was dead, and threw her out.

As she hit the ground, something fell out of her pistil. It was seeds.

After about three weeks, little plants began to sprout out of the ground. In a few months, there were little flowers to take their mother's place, and they grew up to be happy because they always had each other to keep them company.

Meghan

Story 2 - Computer

Toby the Turtle

Once upon a time, there lived a turtle named Toby. He lived in a fish bowl owned by Luke. Once in a while, Luke would let his turtle out of the bowl to walk a round.

One day Luke took Toby outside to get some exercise. He put Toby on the lawn, then went inside for a glass of water. When he came back outside, Luke could not find Toby. "Toby, Toby!" Luke called. After awhile, Luke got down on his hands and knees and felt around on the grass for his turtle. He searched the whole yard for Toby, but couldn't find him.

He went inside and began to cry. After a few hours, Luke's parents came home from the horse races.

"What's the matter Luke?" asked his mother.

"I lost my turtle, Toby." he said.

"Well, how did you do that?" asked his mother.

"Well, I took Toby outside to walk around in the grass, then I went inside to get a glass of water, and when I came back out, he was gone." said Luke. He started to cry again.

Luke and his mother went outside to look for Toby. "I found him!!" yelled Luke after they had been looking

"I'd love to, mom!" said Casey.

Finally the day came.

"Okay you three," said Aunt May. "You be good for Casey."

"Yes, mom" they all answered. Aunt May started to tell Casey things to do about the baby. "She wakes up every 4 hours unless she's hungry. Her bottle is in the fridge and you can heat it up in the microwave for 3 minutes on low. Her food is in the pantry on the 3rd. shelf. Today she is supposed to eat the peaches. Her bib is in the drawer with the tea towels. "I got to go. We'll be back at 9:00. By!" After her aunt left they watched tv for ahile. Suddenly the baby started to cry. Casey walked into the baby's room, and picked her up. "Don't cry Angela." Casey said. Still holding her she walkedinto the kitchen and popped a bottle into the microwave. "I'll just set you down here" She tested the bottle. "Here you are Angela." Casey stuck the bottle in her mouth. She still didn't stop crying. Casey put her on Tanya's knee. "Can you hold her for a while?"

"Oh sure." she said. Casey walked into the kitchen. She took out a jar with the word peaches on it. "Tanya can you bring in Angela?"

In walked Tanya with the crying baby. "Just set her down in the highchair." She took a bit of mush on the spoon for a while. "He must have been hiding under the shed." He took him inside and gave him some food.

Meghan

Story 3 - Computer

Mystery of the Mouse Eyes

part 2

Mary Jane started to slow down. I could tell she was getting exyeremly tired. I jumped off the bike and started to run a long side of her."They'er coming closer Mary Jane" I yelled. She jumped off the bike. We both started to run. We headed for the high way. (that way if they tried to pick us up people would see and here us call for help, it was also shorter). We made it home all out of breath.

"Mom!" gasped Mary Jane, "3 men, they are at Uncle Jim's house..."

I cut her off "they killed him" I cried, tears started pouring out of my eyes.

"They'er coming here to get us" Mary Jane said "We half lock our doors". "Girls, you

sure are acting strange. Uncle Jim is not dead. I'll take the car over there and show you.". She thumped out of the house, slaming the door behind her. "Mom." yelled Mary Jane

"Mary Jane, I know what you are thinking, and we can't go out there. They'er after us, remember?"

"I know, nut if they get mom...". She stoped talking and taers started to roll down her cheaks.I'd never seen her like this. Her long blond hair all messed,(the only time her hair ws like this was in the morning after she got up), her beutiful complection(her face) all scrached up. Poor Mary Jane.

I wish I could do something to cheer her up. She looks so glum. "Mary Jane, whats the matter?" I asked.

"Oh nothing. I'm Just a bit nervus about mom going over to Uncle Jim's house alone."

"Don't wory, she'll be all right, I can garente it." I said.

"I hope so." said Mary Jane. Just as she said that, mom came threw crying. "Oh mom, whats the matter?" asked Mary Jane.

"It's Uncle Jim, you were right, he is dead!" mom broke out in to tears. Mary Jane and I sat down beside her. Poor mom. Uncle Jim was her only brother. They were really close for being brother and sister.

"It's okay mom." Mary Jane said

"No it's not. That would be like me saying, 'It's okay' if your sister died."

Out of the corner of my eye, I saw some thing that looked familer, the blue van, the men inside they are here to kill us. I ran towards the door, and put my hand up on the lach to lock it. "Mary Jane, they are here." Mom ran to help us.

"Janis, go lock the back door!" my mother comaned me. I ran into the kitchen. Beside the stove was the back door. I locked it. Just then the kettle wisteled. I had a perfict idea. I poured the hot water into 2 tea cups. Then I went outside, with the hot water. When I was behind the 3 men who were trying to get in, I poured the hot water on them, then ran into the house locking the door behind me. "We're safe for now!" I called to mom and Mary Jane. As soon as they heard that, Mary Jane ran to lock the door which mom was holding shut.

"What did you do?" asked mom.

"I poured the hot water that was on the stove into 2 tea cups, took them outside, and dumped the water on them."

"Oh Janis!" said Mary Jane,"You are so brave!"

"Thank you, but we can't discuss that. The men will be back so we have to get out of here quick!"

"We could go to your grandma's house." suggested mom

"That's a great idea mom." said Mary Jane.

"If we are going to grandma's then we brtter leave now." I said. We got into the car and off we went to grandma's.

When we got there, mom asked, "Do nyou mind if we spend a few days here?"

"Not at all." Grandma said in her old ladys voice.

We went up to the rooms we usually stay in when we stay at her house. "Mom, why didn't you tell her why we are here?" I asked. I knew what the answer would be, but I felt like asking.

"I didn't want to worry her. She is an old lady, she couldn't take if we told her about Uncle Jim's death, and the men coming after us." she said.

"Oh." I said.

After 24 games of solitary, Grandma called us down for supper. "I'll be down in a seconed" I called to her. I finished picking up the cards, and went down stairs. When I got down I saw Grandma crying endlessly. I went over to Mary Jane and wispered,"Mom told her didn't she?"

"Yea. She's taking it pretty bad too. Poor woman." said Mary Jane in a low wisper. Supper was pretty quiet that night, exept for the little sounds Grandma was making as she cried. After Grandma went to bed, mom asked me a few questions."Honey, about how tall were the men?"

"I don't know, about as tall as you." I answered.

"Did you see their hair color?" she asked again.

"Mom, they were wearing ski masks." I said. "I don't feel like answering any questions to night." I said.

While I was a sleep, I dreamt the men had killed all of us. I woke up screaming. Mom and Mary Jane had come running into the room. "They are going to kill us." I said.

The next morrning mom called the police. They sent someone over to keep an eye on us. Sort of like a body gard. The body gaurd said we'd have to come home, back to our house, because that was the only way they could catch the killers.

That night after every one was a sleep,(exept the person guarding) I heard the front door creak open. I shot strait up in bed and began to panic. The sweat was just pouring out. I ran into my mom's room. "Mom!" I said in a low scream, "The killer, it's here in our house!"

She shot srraight up in bed just like I did when I heard the front door open. "Don't panic!" she said quivering. "Quick, go get your sister." I ran into Mary Jane's room. She was sitting staight up in bed.

"The killer is here she said in a low wisper."

"I know. Mom said to come get you."

Before we even made it back to mom's room the lights went on downstairs, and we heard our guard yell, "FREEZ!!" and saw him point a gun at the men we saw in the truck. I'm not sure what Mary Jane was feeling, probably puzzled, I thought because she had a puzzled look on her face. Suddenly we heard a buch of sirens, and saw the men being put into police cars. I turned around to go get mom when I saw her standing there watching in awe.

The next morning we got a phone call. "Hello, is yor mom home?" asked the vocie when I answered

"Yes, will you just hold on a minute?" I ran to get mom. "Phone!!" I called to her.

"Hello," she answered. She talk an awful long time. When she came back downstairs she said, "That was the police, they told me that the men would be fined $500.00 and would be put in jail for 3 years.

"YAHOOOOO!!!!" yelled Mary Jane and I togeather.

I went upstairs into my bedroom to lay down and relax. Suddenly I hearda sound. Ot sounded like my drawer fell out of it's place. I turned around quickly. there was no one there. "Mary Jane!" I called. "I think we have another mystery!!"

Sarah

Story 1 - Paper and Pencil

How Earth got its Color

In the Amazena in 0001, Nanabush was playing with his friends of the forest. The forest was a dual color.

Nanabush thought for awhile and said, "I shall get some paints." The next day Nanabush walked one mile to the store. He bought red, orange, yellow, green, blue, brown, black, white and purple. He paid the man with furs.

Nanbush went back to the forest and called all the creatures. He painted the robins, brown and red. He painted the sky blue the meadows green the trees brown, and all the other wonderful things. Animals were more happier. And that's how the earth got its color.

Sarah

Story 2 - Paper and Pencil

Return of the Cubs

Part 2

The cubs were getting big now, they were four months old. Rebecca and Fighter were starting too teach them survival.

The first thing they had to teach them was too catch wild animals. First Rebecca and Fighter had to show them how to sneak up on their prey. When to chase their prey and how to spring on the animal. They learned very quickly. On the II day Gerard cought a rabbit. He was proud of his catch.

After each cub cought a rabbit, Fighter and Rebecca, then taught them who was their enemy.

One day while they were hunting for food. Gerard heared a whistling sound coming from some bushed he was a curious cub. He quickly ran in. He let out a cry and ran out of the bushes again and ran to his father. Fighter said, "I will not protect you. You are scared of just a little bird. I think you a coward." Poor Gerard, he thought, he never did like me." Then his father came over and said, "son your'e not a coward but I didn't think you should have run away from a little bird." "I'm sorry, father."

The next day there was a fawn sneaking by. Shenan, Gerard and Hollywood Gold quickly leaped on it. After a few minutes the fawn was dead and their parents were proud of their children.

Then one day the cubs were playing by a campsite where people were camping. What will happen? Will they run home quickly to their parents? Find out in part three.

Sarah

Story 1 - Computer

The Problem

In the town of Cooking Lake, a boy named Toby, was busy doing his spring cleaning. "I don't want that," he yelled, throwing his old ragged blanket into the junk box. After a little bit of cursing and losing his temper, he was done.

As he was taking his garbage out to the garage, his best friend, Tiny, came over to ask him if he wanted to play ball.

"Sorry I can't. I have to do some homework."

"Just come for a little while."

"No, I can't I said." They started to argue. Very soon they were punching and swearing at each other. When Toby's mother, Mrs. Brown came out, the boy's quickly stopped fighting. Then Mrs. Brown said, "I am ashamed of you both."

Toby answered quickly, "I told Tiny, I could not play with him because I have homework to do."

Tiny started to walk home dragging his bat and ball with him. He screamed very harshly, "I don't need a dumb friend, like you!" " You're so dumb in math that you look over my shoulder and cheat!"

"Shut up, you are just a nerd," yelled Toby.

"That's enough boys," yelled Mrs. Brown.

That night at supper, Mr. Brown asked, "how did your day go Toby?"

"Not very well. I had a fight with Tiny."

"Well, don't you think you should make up?"

"It was not my fault. I told him I had to do my homework."

Just then the phone rang. Toby ran to get it. It was Tiny. " Hi Toby, I was just wondering if you want to play ball."

"Sure I will," replied Toby.

In the end it was back to normal until there was another problem.

Sarah

Story 2 - Computer

The Alley Cat

Have you ever stopped to look into an alley where cats scrounge for food? Well, I sure have. I will tell you a story about an alley cat who was so weak that he almost died. But with lots of love I saved him. He's alive to this very day.

One day in the month of May, I was walking down the back alley of our apartment block. I enjoyed my walks in the alley because it was very peaceful. That day was different, though. I heard a sudden cry coming from some old garbage cans. Curious, I ran to see what was crying.

When I got there, I saw a little cat. He was very weak. I picked him up and carried him to the apartment. I left him by a pipe and ran to get a blanket. There were no pets allowed in the building. I had to sneak him in.

When I finally got him into the apartment, the snobbiest girl in the building came by and asked, "What do you have there?"

"Nothing you would be interested in", I replied nastily. I quickly walked on and went into our apartment. No one was there so I was safe for a while. I went to my piggy bank and took out seven dollars. I left the cat in my room in my closet.

I bought a bag of cat food at the store and rushed home. Running into my room, I rushed to my closet. I poured a little dish of food for the cat. He gobbled it up fast.

A week went by and the cat was getting strong. I decided to call him Fluffy. When he was strong again, I asked my friend if she wanted a cat. She asked her parents if she could keep Fluffy. They agreed. That day I brought him over. Now he was better and he had a home. He was very happy there.

Sarah

Story 3 - Computer

Rusty

It was a sunny morning on Thanksgiving day. It was a good one, till mom saw my dog Rusty lying on the ground half dead. Mom ran to get her. She put her on a board away from the ground. When I was eating breakfast, I was almost in tears. Mom said, "I don't want Rusty to suffer any more."

"I know" replied dad.

When we went outside, she had blood coming out of her nose. Within two minutes she was dead. We buried her in our garden.

Two more days went by and we got a new dog. He's a good dog, but I still miss Rusty.

Sarah

Story 4 - Computer

The Clue

It was a beautiful night. We all sat around the camp fire. The flames of the fire were bright with orange and yellow hues. Everyone was telling jokes. I sat listening to the Loon's peaceful singing. It was like I was in a trance. I quickly fell asleep.

After what seemed four hours, I heard Patti in the background. She was saying something about a wild horse. I opened my eyes but there was no one in sight. I felt a shiver coming down my spine. Everybody must have gone back to the cabins. I quickly jumped up and ran to the cabins. The only person who was there was Patti.

"Did you call my name?" I asked in a suspicious voice.

"No," she replied.

"Then why were you calling me?"

"I wasn't."

"Where are the others?" I asked.

"I thought they were with you."

"They were, but when I woke up they were not there."

"Something is fishy", I said.

Chapter one

The warning

We started hunting for clues. Patti and I make very good detectives. I walked to the beach to see if there was any sign of the others. Just as I was turning to get back to Patti, someone tossed me to the ground. A piece of paper flue out of his hand. I quickly got to my feet.

I ran back to the cabins. The note had a strange message on it. The message read, CAVE W+h WILL LEAD YOU TO YOUR FRIENDS. "What does it mean? This message is all cramped up in my memory. I know it means something. But I don't know what."

CHAPTER 2

The Theory

"In my dream, you told me something about the Wild Horses. The other day while I was hiking I saw a outline of a horse drawn on a piece of rock," I said.

"I know, it might be a clue to the riddle. If you take me to the rock, we might figure out the message," exclaimed Patti.

"I think I still remember where it is."

After what seemed like an hour, we arrived there. The drawing was where I found it. Just then we heard a rammbling sound in the distance. It was coming from a cave, not far from where we were standing.

"Its like a volcanoe," we both whispered.

Chapter 3

Safe

We ran over to the cave. We saw a light shining through an opening, at the bottom. Curious, we walked over to the pile of rock. We heard an echo in the cave. We shivered with fright. We started to throw the rocks off the rock pile. It took a while. We made a hole big enough to fit into. I crawled in. Everyone that had been missing was huddled together. They quickly ran to meet me. Just as we crawled out of the cave, we saw Patti fall on a sharp stone. I ran over to her and said, "What happened?"

"I don't know."

Two of the strong boys carried her home. After we got back to the cabins we told them what happened. I said to Patti, "We actually solved a case.

Joan

Story 1 - Paper and Pencil

How Cats Eyes Glow

Long, long ago in a far away land called Silver Shade, there lived many different knids of cats. Each cat had a name to fit the color, shape and size of them. Why don't I introduce the characters in the story. The first character I will introduce is Freddy Fathead, the cat. The reason he is called that is because he has a fathead and a small lean body. The next character I'll introduce is Nanabozo. Nanabozo helps animals and other living things including people. Last but not lease is Sam the slick cat. Sam is the coldest and the most slickest cat of all. Any way let's get to the story.

One day Freddy the fathead was taking a walk around the park, when he meet Sam. Freddy and Sam are really good friends since they were kittens. While they were walking they meet Nanabush. They asked Nanabush if he would like to join them. So off walked the two cats and Nanabush. While theu were walking Nanabush asked his two friends if they would act out the story Nanabush was going to tell some children. About an hour later it started to get dark. So Freddy and Sam and Nanabush went to where

Nanabush lives. When they got there the children were waiting for their bedtime story. The children liveed quite near to where Nanabush lives. This time Nanabush was going to tell the "How Cats Eyes Glow".

One day there was two cats that were very unusual. They would always sleep in the day and hunt for their prey at night. But thr strange thing about it was that Sam and Freddy would stare at the moon because they needed light to guide their way. The one night Sam and Freddy didn't have to stare at the moon because their eyes started to glow. Soon the news spread and all of the cats in the world stare at the moon. And that's How Cats Eyes Glow.

The

End

"Now off you go to bed!" Nanabush told them. So the children ran home and went to bed.

Joan

Story 2 - Paper and Pencil

(Untitled Story)

One day Emily Mayer was sitting on her bed reading a Sweet Valley High Love Letters #17 book when the phone rang. Karen, Emily's stepmother answered the phone. "Emily dear Dan wants you on the phone." Emily picked up the extension in her bedroom.

"Hi Dan what yah doin?" Emily asked.

"Nothing really, but I'm wondering if you would like to go to the school dance on Saturday night with me?"

"Sure I'd love to!" Emily answered back. This was Emily's big chance to get to know Dan better.

"Well, I've got to go now my mother wants me to clean my room, Bye." Dan said hanging up the phone. Emily hung up the extension and continued reading.

The next day was Friday. In the Mayer's house Emily was running around trying to find something to wear to the dance Saturday. She wanted to impress Dan. He was like a dream that was coming true for her.

Soon it was Saturday afternoon. Emily woke up and heard the birds singing. Her dog ran to greet her. He is a weiner dog. He has floppy brown ears and a long flat spotted brown and white body.

Emily asked her stepmother if she could go to the shopping mall to get a new outfit for Dan. They lived about a block away. First she went into Antels. There was nothing for her. The second place she stopped at was Reitmans. Emily found this beautiful dress. It was baby blue with puffy lace sleeves. Knowing the dress was made for her she bought it. After she got the shoes, earrings and other fine jewelry, she started towards home. Everything was going to be perfect.

It was 4:00 in the afternoon when she got home she was so excited about the dance an even more importantly, Dan. Soon 6:00 came and Emily started to get ready. First she put on the fabulous dress, then fixed her light golden brown hair. "Emily dear, would you come down here for a moment? That is if you have the time." "Sure I do!" Emily said. So she walked down the stairs to where Karen was standing.

"Emily, I would like you to babysit Karrie for me. You know babysitters now-a-days. They fall a sleep on you and then to top it off they want twenty bucks.

Your dad and I won't be gone long, bye" Karen said rushing off. Emily was about to burst into tears. Of all the nights her stepmother had to pick the night when Emily had plans.

Ding Dong went the bell.

"Oh great, Dan's here already." Emily thought. She walked up to the door and opened it. Sure enough it was Dan. "Come on in, there is a slight problem. I have to baby sit until my mom and dad come back home. Dan was so understanding.

He watched the baby while Emily was getting ready. About an hour and a half later Karen and Mike walked in. Karen asked a few questions about Karrie and then let Emily and Dan go to the dance.

Emily and Dan got to know each other really well. They ended up having the best time of their lives.

Joan

Story 1 - Computer

TEENAGER'S KNEES

Teenager's knees is an injury that most sport participants get. When you bend your knee, your knee cap and a bone behind the knee cap grinds together, causing pain.

Some treatments will help reduce the swelling and improve your condition. The best treatment for teenager's knees is a lot of rest. Ice will help bring down the swelling and reduce the pain. Some doctors may prescribe medication if necessary. When you have this problem you will have to make some adjustments. Your doctor may prescribe a brace or something to hold your knee cap in place.

When you're in this position there has to be little pressure on the knees. The best activities are the ones that limit the knee to range between 135 degrees and 180 degrees. Some good sports are: swimming, slow - jogging or walking, skating, and cross-country skiing.

To improve your condition some people have to strengthen their quadricep muscle. The doctor will recommend certain exercises. There are about five different stretches.

Take it from me, it hurts!!

Joan

Story 2 - Computer

GOODBYE, SWEET VALLEY HIGH

Down in Sweet Valley High Elizabeth and Heather were sitting on the patio sipping coke slurpies and having a friendly conversation, when the phone rang. Elizabeth picked up the new extension, that her father put in.

" Hello" Elizabeth said as she put down her slurpie.

" Hi,my name is Natasha Maloney, the real estate manager. I hear that you want to sell your house. I might have possible buyers. Will you be home today?"

"Sure I will! What time will you be bringing them over here?" Elizabeth questioned.

"About 1:00 o'clock. Be ready!"

After Elizabeth hung up the phone, she glanced at the clock.

" Twelve-a-clock!! We've only got an hour to clean the whole house," Elizabeth said, screaming at Heather (Elizabeth's friend). After Elizabeth finished screaming at Heather, they started to clean the house. It didn't take them very long to clean up because there were two of them.

About an hour later the real estate manager was at the door.

"As I told you, I was going to bring a very nice couple to see the house." Elizabeth welcomed Mr. and Mrs. Fowler to the new home. Natasha showed Mr. and Mrs. Fowler around the house. At 2:00 o'clock the Fowlers and the real estate manager left.

Heather didn't want her best friend to move, but she knew Elizabeth had no choice. Heather was Elizabeth's friend since kindergarden.

About an hour later Jessica and her mother came walking in with arm loads of groceries, and bags which contained clothes for the twins (Jessica & Elizabeth). Elizabeth told her mother about the real estate manager and the Fowlers .

About a week later the family went to find out what school the twins were going to. The school was a block away from the Los Villas Estates.

Jessica and Elizabeth had mixed feelings about moving. They were glad that they were moving because they would have bigger bedrooms and a lot more space, but the twins would have to make new friends and adjust to their new school.

About a week later Mr. and Mrs. Fowler bought the house. The Hipps (the twin's last name) got a one week notice on when they should move.

The very next day the Hipps started to get ready to move. Elizabeth's friend, Heather didn't know when they were moving.

One Saturday Heather came over when the Hipps were packing their clothes. Heather asked Elizabeth if she would like to go to a movie, but Elizabeth turned her down. Heather started to think that her best friend didn't want her around anymore. So Heather tried to avoid her but it didn't seem to work!

A couple of days later Elizabeth asked Heather if she would like to come over and see her new house. Heather agreed for only one reason -- to talk to Elizabeth about the problem. It was only Heather's imagination. Elizabeth and Heather were best friends again.